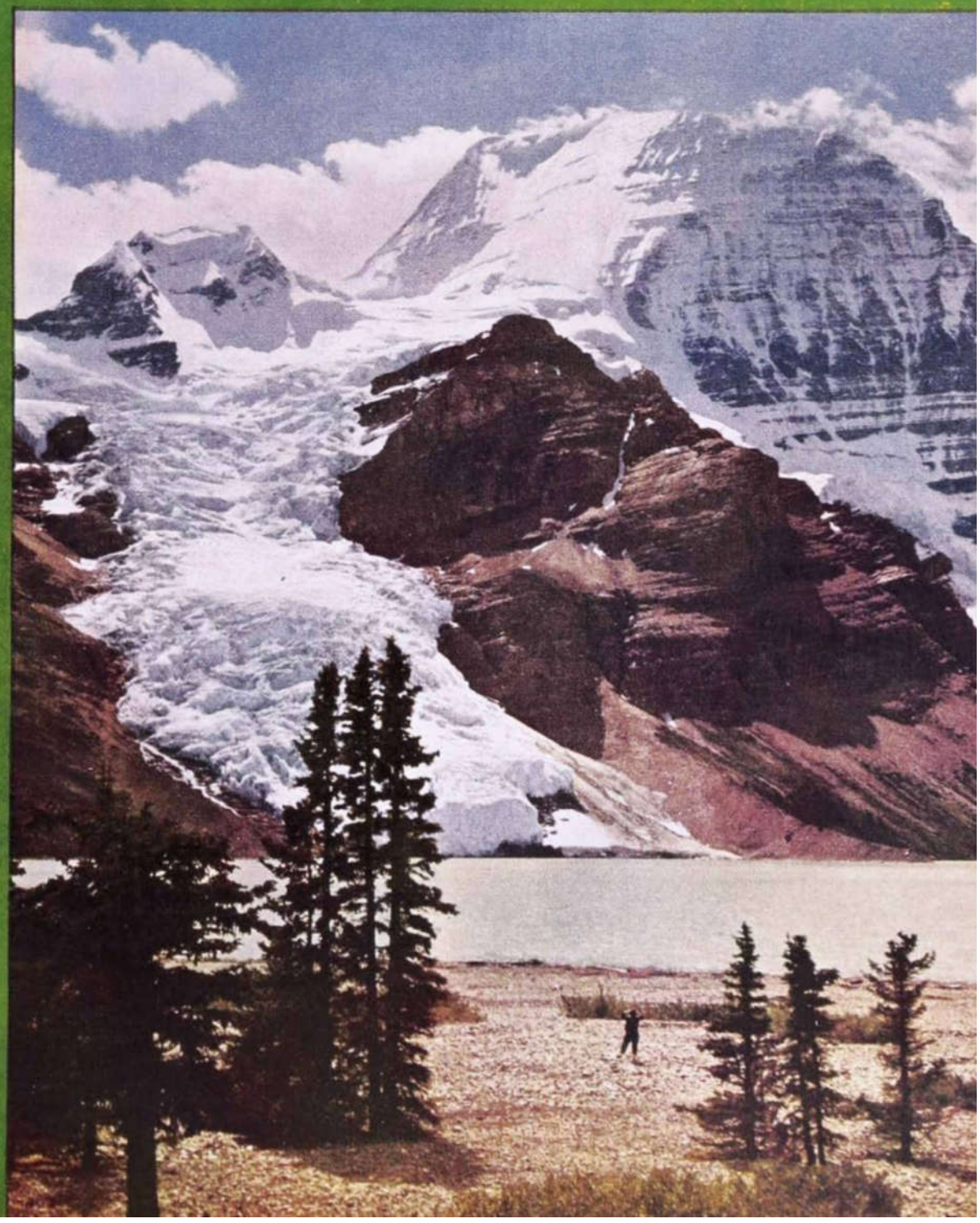
The Beaver

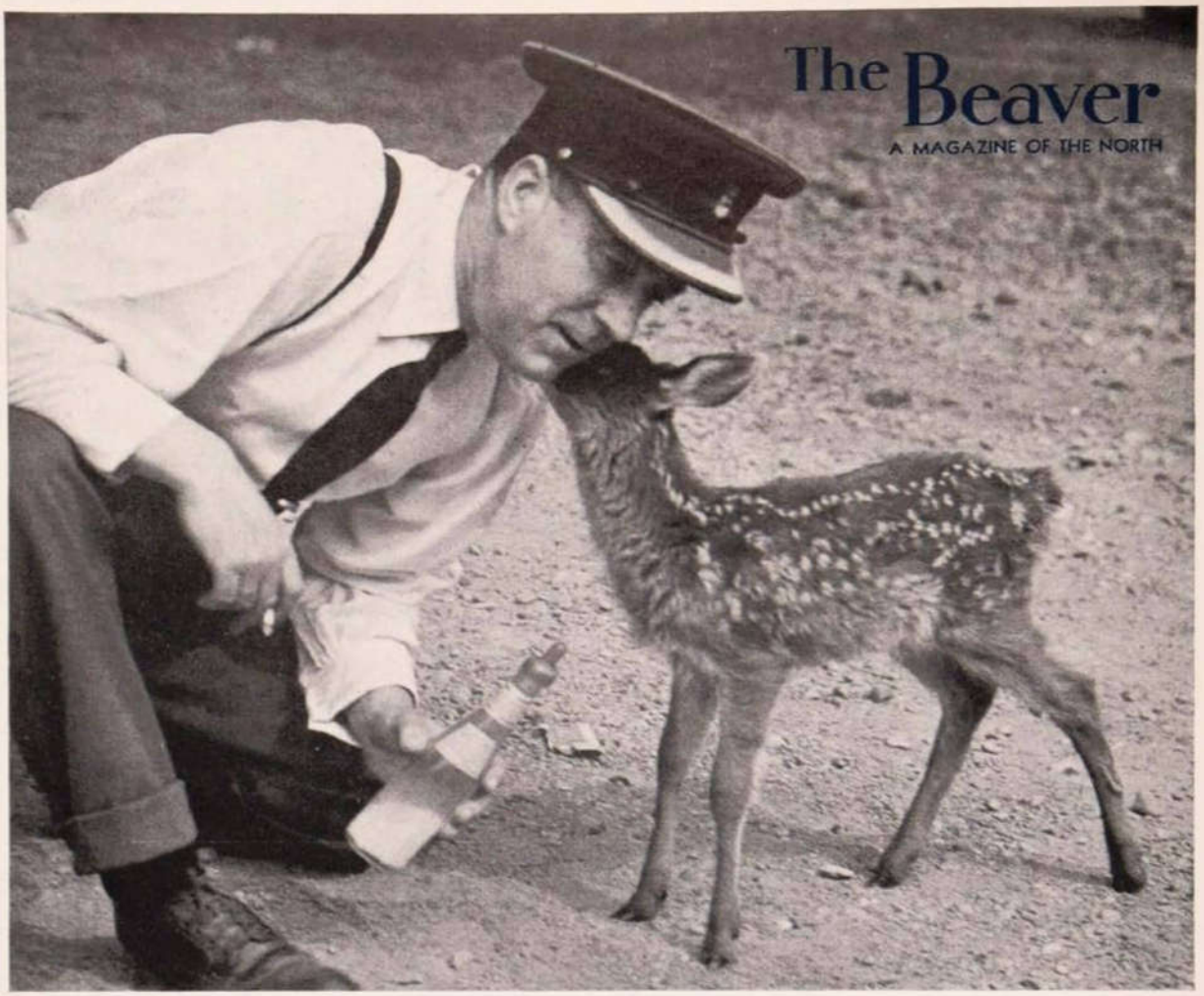
A MAGAZINE OF THE NORTH

BRITISH COLUMBIA ISSUE



MARCH 1953

Mount Robson, highest peak in Canadian Rockies
—R. Harrington



"Spring is here!" A member of the former B.C. Police gets the news from one who ought to know.
Percy Elsey

CONTENTS

OUTFIT 283 MARCH 1953

British Columbia—R. L. Neuberger 3
Power for Aluminum—T. W. Kent 4
Brigade Trails of B.C.—E. P. Creech 10
Granville, Georgia & Seymour 16
Sockeye from the Fraser—Roy Jackson 18
The Carriers—L. Scott and D. Leechman 26
An Era Closes—Norman Soars 28
Flash-in-the-Sky-Boy—F. H. Ellis 33
Rocky Mountain Trench—J. L. Robinson 36
Trail of the Candlefish—Lyn Harrington 40
Spring Packet 45
Books of the North 46

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BRITISH COLUMBIA

by Richard L. Neuberger

OCCASIONALLY we Americans need to be cut down to size. We take for granted that everything in the United States is the biggest, the best and the most. Other lands become forgotten in our flush of pride and enthusiasm.

British Columbia is a fitting realm for us of the forty-eight states to learn that not all the superlatives belong south of the border. Its proportions exceed even those of California, a place where the word "colossal" is used to refer to smaller objects.

I first appreciated the cosmic scope of British Columbia when I was a 2nd Lieutenant in the U.S. Army during World War II. Our regiment was more than 100 miles north of the Alaskan capital of Juneau. In that wilderness of glaciers and granite the great cities of British Columbia, Victoria and Vancouver, seemed as far off as Zanzibar.

Yet, there on a rocky islet in Lake Bennett, stood a wooden sign. It read: "Y.T.—B.C." This was the boundary between British Columbia and the Yukon Territory. All at once I realized that this vast province of Western Canada extended from within sight of the neon glow of Seattle to the ice-nurtured headwaters of the Yukon River. We had been journeying for four days and yet still the land was British Columbia. Even our soldiers from incomparable Texas were impressed!

This was my beginning experience with the incredible dimensions and variety of British Columbia. Since then, I have seen more of its nooks and crannies than most Canadians. I still marvel at all the wonders and resources which lie locked behind its stockade of mountains and forests.

Yosemite Falls, in California, always seemed to me the ultimate in toppling water. Yet the hissing column of the Takakkaw in British Columbia's Yoho Valley has a heavier volume and a more sonorous thunder.

I have never been to Norway, but I stood on the bridge of the S.S. *Aleutian* and heard a naturalized American mariner, born in Trondheim, tell me that the cavernous salt-water gorges of British Columbia were equally as inspiring as those of his native land.

British Columbia to me is a thousand different images. I think of the gaunt desert at Penticton and Osoyoos, where irrigation canals coax orchard fruits up through the sod of the sagebrush flats. I feel again the 190 inches of annual precipitation at Ocean Falls, with groves of fir and hemlock dripping moss and rainfall for twelve months of the year.

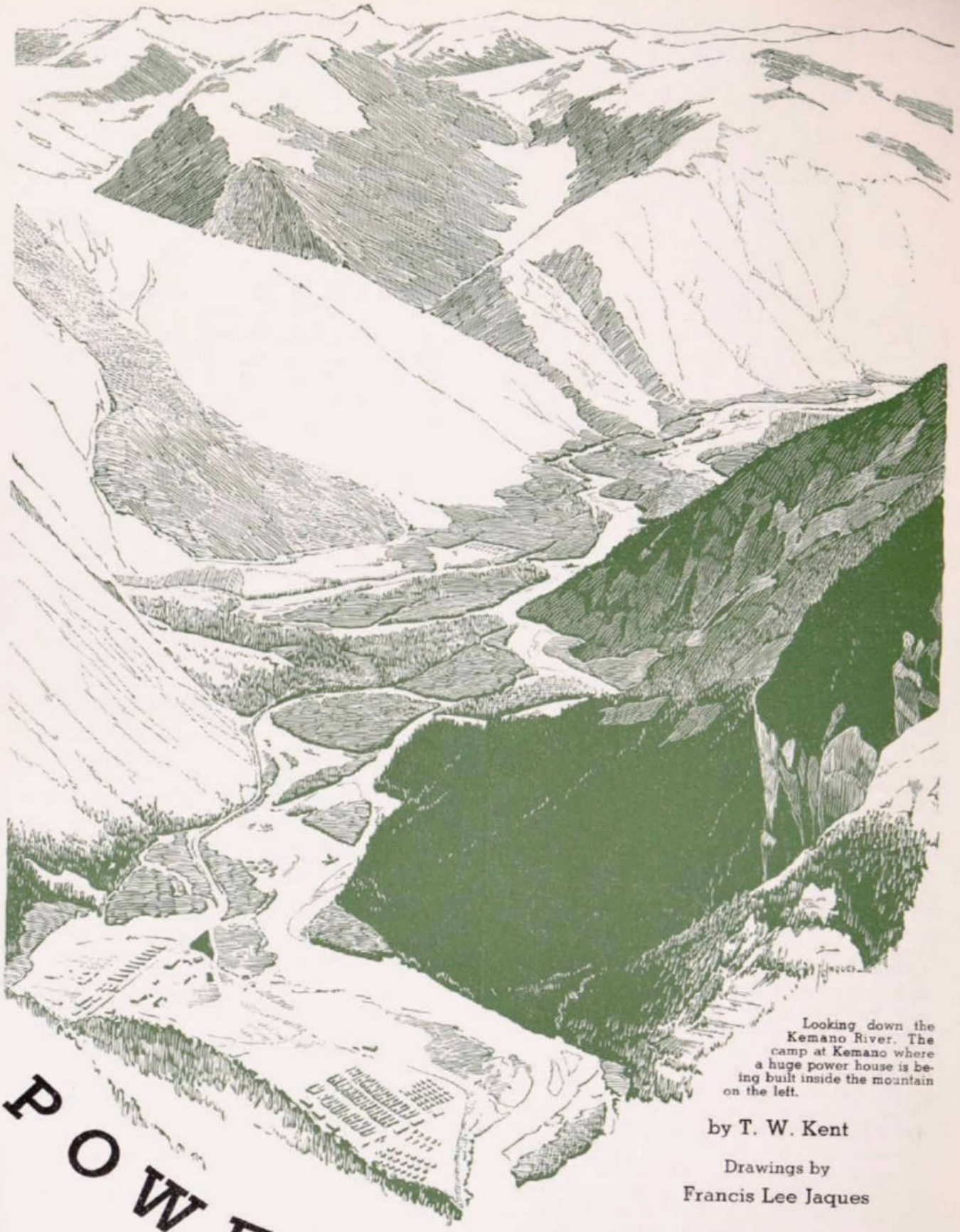
I recall a lonely patrol with a Mounted Police constable on the wooded shores of the Stikine River, and I recollect once more the elbows of the crowds on Vancouver's thronged streets. Only British Columbia in this hemisphere can match the prodigious population growth of California. And only the queen city of British Columbia rivals even faintly that California metropolis of legend and fantasy, San Francisco. A leaping suspension bridge closes the narrow throat of Vancouver's harbor, too, and the city also is flung like a shawl over hills beside the sea. But where naked hummocks guard San Francisco, the sentinels at Vancouver are sabre-toothed mountains powdered eternally with snow.

I never can induce my fellow Americans to credit all the varied proclivities of British Columbia. They smile discreetly when I say that this single province produces apricots and grizzly bears, casaba melons and caribou, peaches and *Tyee* salmon. The smiles become still more skeptical if I go so far as to hint that twice as much mileage of the Alaska Highway threads over the soil of British Columbia as on that of Alaska itself.

Yet even one who has seen British Columbia from Fort Nelson to New Westminster does not know all there is to gather about this Canadian sovereignty beside the Pacific. For instance, at a remote settlement in British Columbia named Bella Coola I learned that twelve years before Lewis and Clark saw the heaving surf off the mouth of the Columbia River, a Scots fur trader had daubed this message with vermilion on a smooth boulder near the end of Dean Channel on the British Columbia seacoast: "Alexander Mackenzie, from Canada, by land, the twenty-second of July, one thousand seven hundred and ninety-three."

Now, whenever I travel in British Columbia, I am prepared to learn again. Inevitably, I know that I will become acquainted with some astonishing new fact about this province where the cold runoff of glaciers makes the arid desert bloom.

My pulse always beats faster in British Columbia. It is that kind of place. I like to believe that Alexander Mackenzie must have thought so, too. True, he left British Columbia in a hurry after that first journey which gave him immortality. But he lit the campfires that have guided countless of his compatriots for more than a century and a half. This trek toward Canada's sundown rim continues. Who can even speculate on its possible diminution? The future of British Columbia is as bright as the golden glow of dawn on the rocky summits which dot the province like watchtowers. ◆



Looking down the Kemano River. The camp at Kemano where a huge power house is being built inside the mountain on the left.

POWER for ALUMINUM

by T. W. Kent

Drawings by
Francis Lee Jaques

FOR an aeroplane, Kitimat is some 70 miles east-south-east of Prince Rupert; for a ship, following the indented coast of British Columbia, the same journey is a full day's steaming. But until 1951 neither aeroplane nor ship had much reason to go to Kitimat, where there was a bay but no settlement except a small Indian village. The transformation began less than two years ago, in April 1951, when a small party of men started to clear the forbidding forest that ran down to the water's edge. By the middle of next year, Kitimat will be an industrial town of 6,000 to 7,000 people. If the world's demand for aluminum continues to expand, it is likely to grow within twenty years or less to a population of 50,000—twice as big as the Vancouver of fifty years ago.

Kitimat stands at the head of the Douglas Channel, a long fiord winding inland through steep, thickly-forested mountains. To the north, a low pass leads to the Skeena valley at Terrace. It was this that might have brought development to Kitimat earlier. At one time there was a suggestion that the railway from Prince George should run to Kitimat instead of continuing westwards down the Skeena, as was eventually decided, to make Prince Rupert the northern port of British Columbia. Now the line from Terrace to Kitimat will be built as a branch—a branch that may well carry more traffic than the original main line.

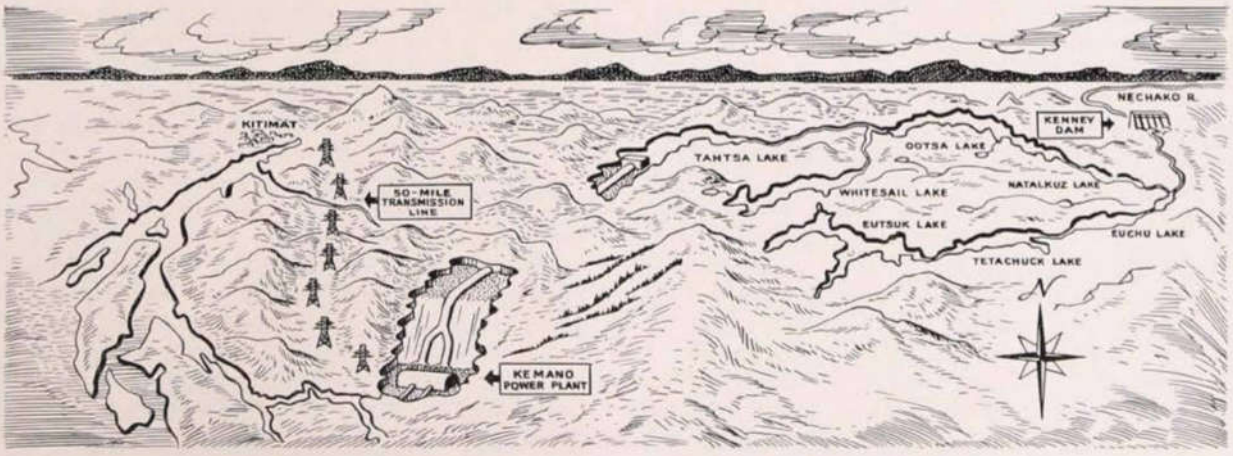
This, however, is incidental. The basis for the development of Kitimat now lies not to the north, in the route to the Prairies that the Skeena helps to provide, but 50 miles to the south. Here the Gardner Canal, a fiord with some of the most impressively beautiful of all British Columbia's coastal scenery, takes deep water almost to the foot of the main Coast Range, where the snow-tipped peaks rise sharply to over 9,000 feet. A small river, the Kemano, joins the fiord after flowing through a deep, narrow valley from the east. At one point—what is now the Kemano site—the valley is only ten miles, in horizontal distance, from Tahtsa Lake, on the other side of the Coast Range. The floor of the valley is almost at sea-level and the lake, lying at the western end of the interior plateau, is 2,800 feet above sea level. The hard rock of the coastal mountains, ten miles thick, shuts off a fall of water eighteen times as high as Niagara.

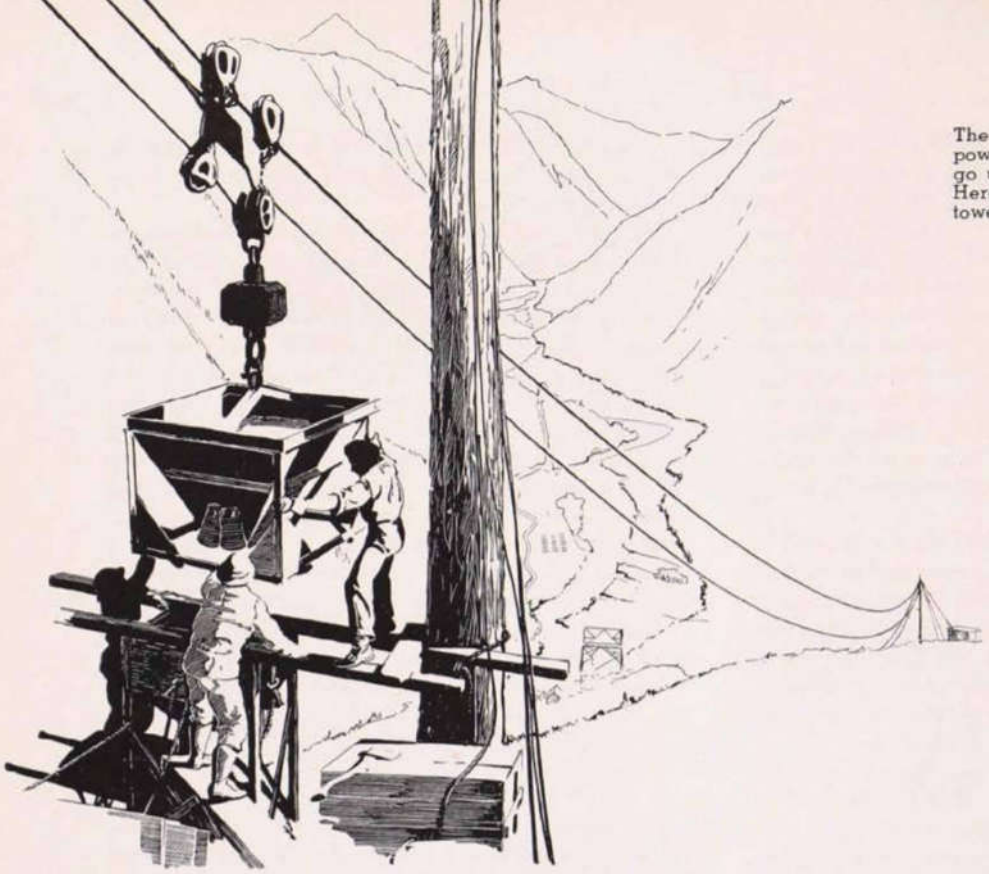
The town of Kitimat is being built because engineers are undoing what the mountains have done for so long. The water is being brought through the rock. It will flow, therefore, westwards—a reversal of the natural direction of its flow. Tahtsa is the most westerly of a series of lakes within the Tweedsmuir Provincial Park, all of which were drained eastwards by the Nechako River to swell the Fraser at Prince George. The first stage in the building of Kitimat was to put a dam across the Nechako Canyon, 125 miles east of Kemano. This, the Kenney Dam, was finished last autumn. Rock-filled, it is 317 feet high and 1,500 feet long at the crest. Behind it the rainfall over a watershed area of 5,400 square miles is now impounded. The levels of the more easterly lakes are gradually rising. In place of the natural chain of lakes joined by narrow rivers and gradually dropping in height from west to east, the dam creates a continuous, if oddly meandering, reservoir. Its water area is some 350 square miles, at a uniform height of 2,800 feet above sea-level.

Across the western end of this watershed area lies the great wall of the Coast Range, a long line of snow-covered beauty above the deep greenish-blue of the lakes. But Tahtsa, its western end right under the wall, will now become the foot instead of the head of the lake-system; and the water will reach the sea not via the Fraser at Vancouver but in the Gardner Canal. The tunnel from Tahtsa to Kemano is 10 miles long and 25 feet in diameter—wide enough to carry a good road. Drilling began a year ago and should be finished this fall. The tunnel drops only very gently—by 137 feet in ten miles—so that at the Kemano end the mining crews are working from a point about 2,600 feet up the steep side of the valley, their only connection with the world below, an aerial cableway.

The water, however, will never plunge down the mountain-side like the cable. The western end of the tunnel will be filled in, and the water from Tahtsa will fall instead

Diagrammatic map, showing how the waters of the lakes draining eastward into the Nechako River will—by damming that river—be made to flow westward through a tunnel and down inside a mountain to turn the generators of Kemano.





The transmission line taking the power from Kemano to Kitimat must go up and over a 5,300-foot ridge. Here a load of concrete, in which the towers carrying the line are set, arrives from below.

down two penstocks half a mile inside the mountain. These are narrower tunnels driven up through the rock at an angle of 48 degrees. They provide the equivalent of a vertical drop of 2,400 feet—sixteen times that of Niagara. Use is thus made of almost all the potential energy implicit in the height of the interior plateau above the sea. The water reaches the turbines, which are about 200 feet above sea-level, at a pressure of over 1,000 lbs. per square inch. The power house is being built inside the mountain, mainly because this will reduce maintenance costs, though it also has the advantage of providing security against air attack. It has involved the excavation of 255,000 cubic yards of rock to provide, in the first stage, a cavern 80 feet wide, 118 feet high, and 700 feet long. The vertical impulse-type turbines, each of 150,000 h.p., will be the largest ever built. Initially, when the power at Kemano is turned on next year, only one penstock will be in use and will feed three of these turbines. The cavern now being excavated is large enough to contain eight generators, so that five more may be quickly installed as the demand for aluminum rises.

The Kemano scheme is so planned that, if the demand expands to justify it, this power capacity can be doubled. A second dam will bring in the waters of a smaller watershed to the north of Tahtsa Lake, another tunnel will be driven through the mountain parallel to the first, and the cavern will be extended—to a total length of 1,140 feet—in order to contain in all sixteen turbines. If this scheme is ever carried out in full, the installed capacity of the powerhouse will be 2,240,000 h.p. and the firm power output 1,670,000 h.p.

Last year the inside of the mountain at Kemano was an underworld of men working in weird caverns and long tunnels of jagged rock dripping with water; an inferno of drilling and blasting; to the stranger it was a nightmare of climbing up rough wooden ladders from one level to another, of splashing through puddles and mud, of jolting precariously over roughly-laid rails on the cars that bring out the debris as the tunnels are pushed steadily forward. In the camp at the foot of the mountain there were as many as 4,000 men, and at the peak this summer the number may be near 5,000. But in 1954 the tunnels will be handed over to the rushing water they are meant for. A staff of only some 50 men will be needed to watch over the underground power-house, and when the scheme is complete Kemano, where two million h.p. of power comes out of the mountain, will be a village of perhaps 300 inhabitants.

The project that will then have come to fruition has a considerable history. It originated in surveys of the area first carried out by the provincial government of British Columbia at the end of the nineteen-twenties. There was never much doubt that large resources of water power were available; the distinction of the Nechako-Kemano project is that it is a remarkably imaginative and ambitious use of water power on a large scale. But developing the power was not the real economic problem. The problem was whether there were any industries which could turn even such cheap electricity to profitable use, in an area hitherto so remote and undeveloped. Aluminum was clearly one of the possibilities. Its smelting requires large quantities of electricity—a minimum of 10 kilowatt-hours per pound of metal—and, since aluminum is light in relation to its value, northern B.C.'s remoteness from the main manufacturing industries that use aluminum was no great handicap. But an aluminum plant has other requirements; in particular, an economically large unit takes a good deal of space. At Kemano Bay the mountains come down steeply to the Gardner Canal and there is no room for an aluminum smelter. Hence Kitimat: it is near enough to use the Kemano power without heavy transmission losses; a suitable site for the smelter could be cleared and levelled

(though not without the use of much gravel fill); and there is deep water for shipping. Bauxite, the aluminum ore, will be mined in Jamaica and undergo a first processing there. The resulting alumina—in which the non-metal content is one to one, against four to one in the original bauxite—will be shipped to Kitimat through the Panama Canal and unloaded directly into the storage facilities of a smelter only 800 yards from the wharf.

The decision to go ahead on this basis was made in April 1951 after three years of painstaking survey work and engineering investigation by the Aluminum Company of Canada. It is twenty-eight years since this company transformed the Saguenay valley of Quebec by establishing at Arvida the plant that is now the world's largest aluminum smelter. But even with this experience the pioneering problems at Kitimat were stupendous. Perhaps the most critical concerned the transmission line. It is only fifty miles from Kemano to Kitimat, and from both ends convenient valleys run much of the way. But between is a steep ridge, with a minimum height of 5,300 feet. On the Kemano side, particularly, the bare rock rises precipitately above the timber line. At the top there is a permanent ice-field and the wind is always cold; the higher peaks rise—if the mist does not obscure them—grimly on either side, while in front and behind the sides of the ridge fall away at a sickening angle to the narrow valleys below. Could a transmission line be built to withstand the winter conditions of such a place? The cable and towers must bear an enormous icing load as well as heavy pressure from wind and snow. Since actual experience could alone provide firm conclusions, the parts of special test towers were flown to the top of the pass by helicopter and erected there for the winter. They stood. The cable that will withstand these conditions is of aluminum reinforced with steel; with a diameter of 2.29 inches, it is the thickest of its kind ever used. It will transmit power at 300,000 volts.

The building of the line has required a series of small camps along its route, and the gradual pushing of a rough road to the top of the pass from either side. It had to be blasted and bulldozed as a narrow ledge up the mountain face. On the Kemano side it climbs 4,800 feet in 4.6 miles in an almost continuous, breath-taking switchback with a gradient, for most of the way, of 1 in 4. By this route the electricity will come overland to Kitimat while the raw material is brought in by sea.

After a year of preliminary clearing and preparation, the construction of the smelter was begun in April 1952. Before the snow came this winter the site had all been prepared

"On the Kemano side the road climbs 4,800 feet in 4.6 miles, in an almost continuous breath-taking switchback."

and some of the permanent, steel-framed buildings were up. One of the largest is being used temporarily as a workshop, where concrete for further buildings is being poured into standard forms through the winter. Last year there were 1,600 men at the construction camp at Kitimat, working a 9-hour day and a 6-day week, living in a variety of bunkhouses that includes a beached pleasure steamer, and eating in a giant cafeteria below which there is already a comprehensive Hudson's Bay store. This summer, at the peak of the construction work, Kitimat will have a labour force of some 3,000 men. By the summer of 1954 the smelter should have begun to produce 80,000 metric tons of aluminum a year. Some 6,000 tons of steel, among other materials, will have gone into the erection of the first pot-lines and their ancillary buildings. The pot-lines are, of course, rows of electrolytic cells, containing alumina and other materials; from them molten aluminum is tapped off after it has been liberated by the action of the electric current. The Kitimat plan provides for the eventual expansion of the smelter to an annual output of 500,000 tons if demand warrants it.

That is not however, the full promise of Kitimat. Once an industrial town has been established—even on the relatively small scale of 1954—cheap power and good transport, both by water and by land, may well attract other industries. Pulp, paper and the manufacture of liquid oxygen are possibilities in which some interest is already being taken. The road and rail to Terrace will provide easy access not only to markets, via the Canadian National route from Prince Rupert to Prince George and Edmonton, but also to a potentially rich agricultural area in the Skeena valley around Terrace.

The townsite of Kitimat has wisely, therefore, been planned on a generous scale. It will stand on the opposite side of the bay from the smelter, on rather higher ground and facing south. Until last summer it was an area of thick forest; this summer, the preliminary clearing done, construction will be put in hand. A famous New York firm, which has planned cities in many parts of the world, is responsible for the general design, and an eminent American consultant is also acting as the Aluminium Company's representative. Kitimat will not be in any way a closed company town: service businesses will be in private ownership, and so will many of the houses.

In the first stage, beginning next year, the smelter will employ about 1,200 men and the town will have to provide for a population of 6,000 to 7,000, but there is ample scope for expansion if it is needed either for the smelter or for

At the bare, windswept summit of the ridge between Kemano and Kitimat, prefabricated houses of Camp 11 are covered with corrugated aluminum.

Helicopters had to be used to bring men and equipment to the higher altitudes. Here the first air-drop load for Camp 10, on the transmission line pass, leaves Kemano

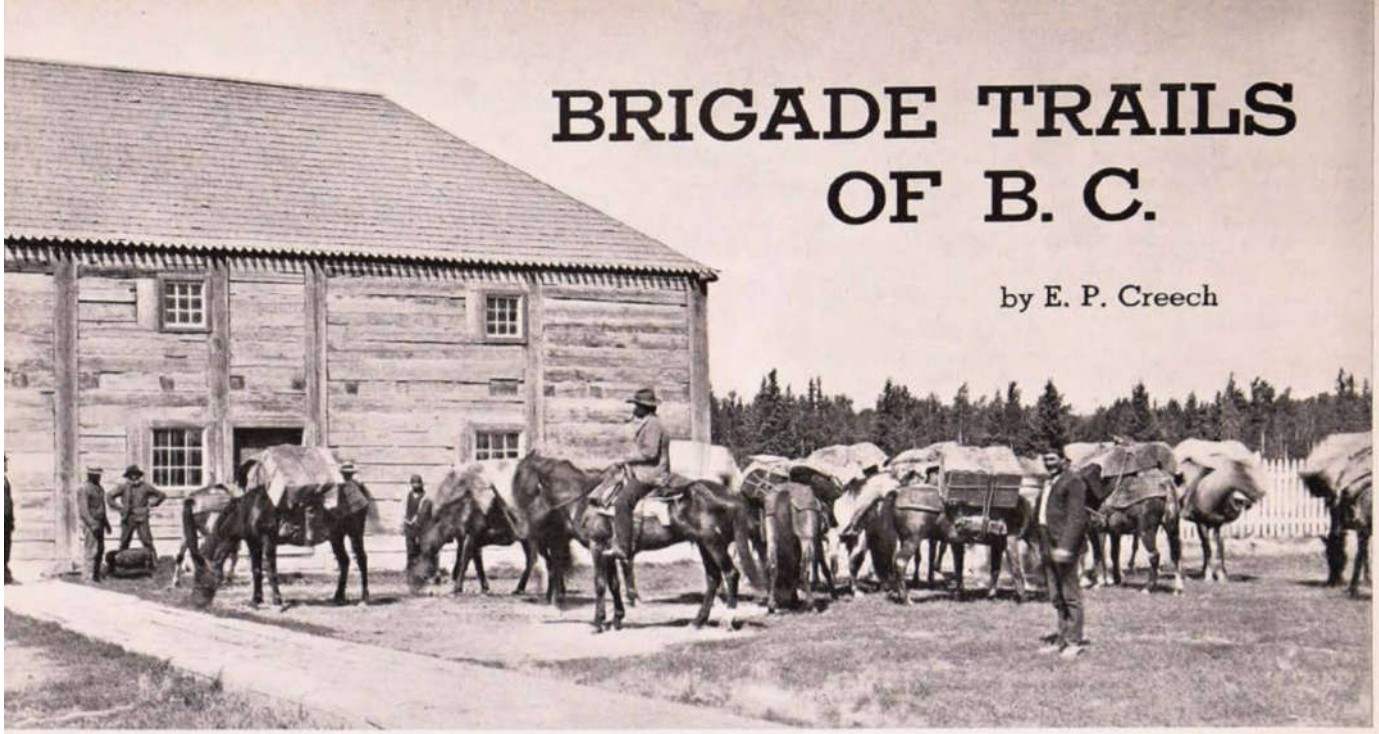
other industries. There is every reason to think that Kitimat will be, on balance, a pleasanter place to live than most towns of its size. It has, of course, some disadvantages. There is much coastal mist and rain, and the snowfall is sometimes heavy. But the temperatures are milder than in most of Canada, and the surrounding country has much untouched beauty. The mountains are less steep than at Kemano, and the gently graded valley to Terrace also helps to prevent the claustrophobia that the most mountainous parts of British Columbia sometimes arouse.

It seems unlikely, therefore, that Kitimat will have any difficulty in expanding if the opportunity is provided. There has certainly been no shortage of labour for the construction work, although the costs of isolation are expressed, from the business point of view, in the wage rates and a rapid turnover of labour; many men go to earn good money for two months or so and then return to their families. The labour problem at Kemano has been the same. On the management side, there are differences. The entire project is in the hands of two main contractors. The first is Morrison-Knudsen of Canada, a subsidiary of the American firm of the same name, one of the largest and best-known of construction companies. This firm has been responsible through a sub-contractor, Mannix Ltd. of Calgary (who are Canadian associates of the American Morrison-Knudsen company), for the dam on the Nechako; it is directly responsible for the tunneling and power-house construction at Kemano and also for the transmission line. The second main contractor, Kitimat Constructors Ltd., is a specially-formed group of eight of the larger contracting firms in British Columbia. The pooled resources of this group, which includes specialists in a variety of civil engineering and construction work, are being put into the building of Kitimat.

When the project began, its total cost—if it was carried out in full, to give a smelter output of 500,000 tons of aluminum a year—was roughly estimated at $500 million. A revised estimate, taking account of extra costs since 1951, would probably now be about $600 million. Inevitably, so large a construction undertaking is a considerable disturbance to the B.C. economy. A boom always promotes some illusions and mistakes by both management and men. But it is fair to say that in British Columbia the signs of any permanent hurt, either to the Kitimat project or to the economy in general, are few. And the long-run gains to the British Columbia economy with the development of so rich a source of power in a new area, will certainly be great and may be enormous. No reasonable man will predict success and prosperity with absolute confidence. The full development of Kitimat depends on a continuing expansion in the world economy, and especially on a buoyant market in the United States. But in that Kitimat merely shares the inevitable characteristic of all the new development of Canada's primary resources of power and minerals. It is fairly safe to say that if the free world prospers and thrives, Kitimat will surely prosper and grow. That will be the reward for one of the outstanding industrial ventures of the decade, outstanding not in Canada alone but in the whole world. ◆

BRIGADE TRAILS OF B. C.

by E. P. Creech



A pack-train of 1891 at Fort St. James, second oldest settlement in B.C., ready to set out over the first brigade trail for the oldest settlement in B.C., Fort McLeod. James McDougall

The story of the packhorse brigades is one of heroism and hardship in a wild and rugged country.

THE "brigade" trails of the Hudson's Bay Company and its predecessor the North West Company occupied a strategic position in the transportation system of British Columbia from 1812 until the 1860s, when the rush to the Cariboo made it necessary to construct a wagon road between the rich mines of the interior and the coast towns.

For half a century these trails were the only practical routes of travel from the head of navigation on the Fraser River, and from Fort Okanagan on the Columbia River to the interior watershed of the Fraser, and the story of the brigades that travelled them is one of heroism and hardship in a wild and rugged country. In his 1829 dispatch to the Governor and Committee of the Hudson's Bay Company Sir George Simpson reported," . . . the mode of transport being from Fort Vancouver to Okanagan by Boats, from Okanagan to Alexandria by Horses, from Alexandria to Stewarts Lake by North Canoes, and from Stewarts Lake to the outposts by a variety of conveyances, vizt. large and small canoes, Horses, Dog Sleds and Men's backs; in short, there is not a District in the country, where the Servants have such harassing duties or where they undergo so many privations."

The North West Company's fur traders from Canada first reached the Peace River in 1786. A vigorous policy of exploration culminated in Sir Alexander Mackenzie's journey down the great river which now bears his name, in 1789, and four years later, his voyage by river and by Indian trail to the Pacific coast.

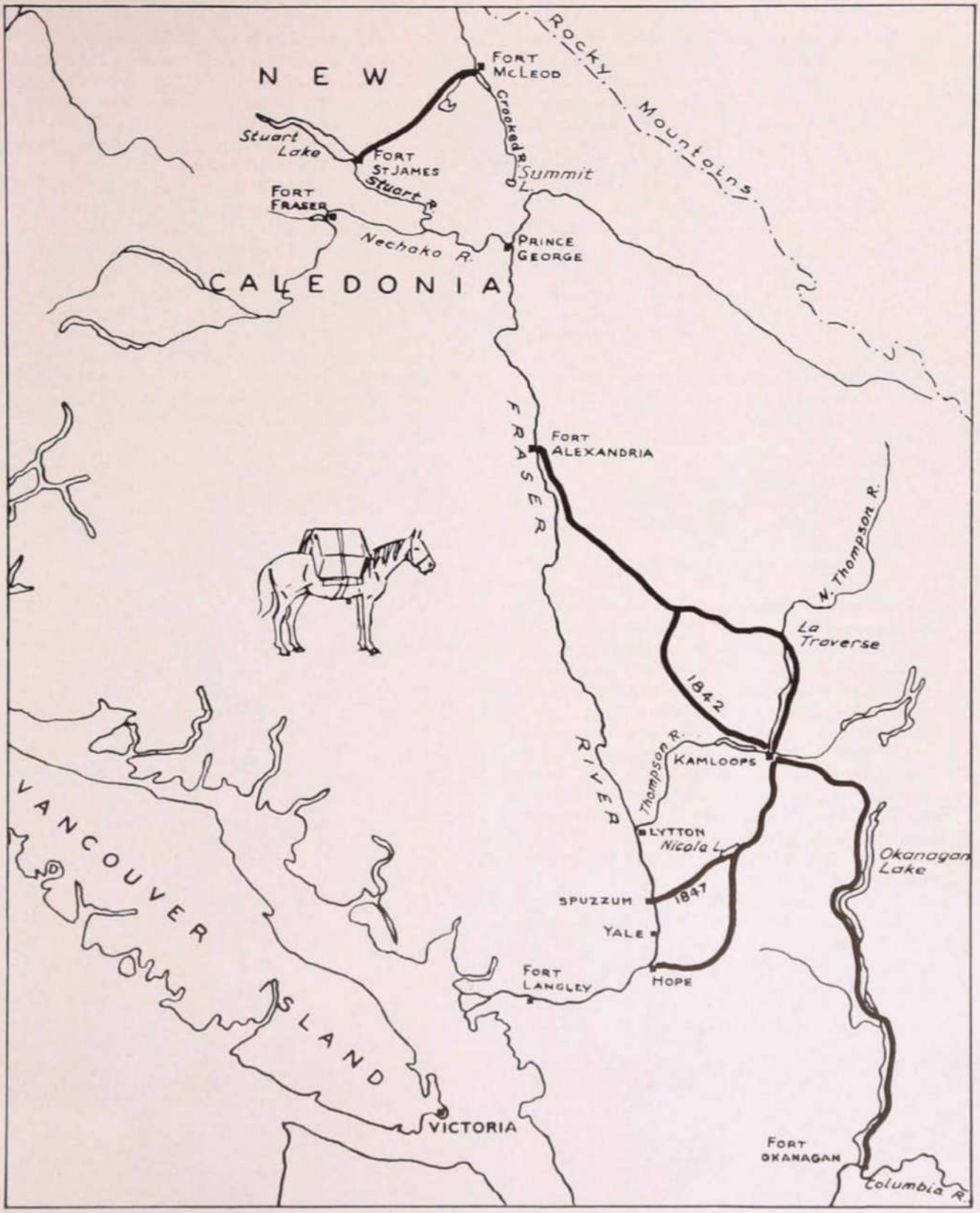
It was not until 1805 however, because of difficulties within the North West Company, that the first trading post was established west of the Rocky Mountains. In that year Simon Fraser built Fort McLeod, and in the following year Forts St. James and Fraser. The territory served by these posts was known as New Caledonia.

The Pacific Fur Company, also known as the Astor Company, with headquarters at New York, established trading posts on the Columbia River which were supplied by ships. The most northerly of their establishments was Fort Shuswaps (Kamloops)[1] erected in 1812. The North Westers took over the Pacific Fur Company in 1813 and continued to supply the Columbia Department by ship.

Thus the posts of New Caledonia were supplied by the long and expensive overland route from Canada via the Peace River Pass, while the new Columbia River Department received its supplies and sent its furs by ship from the mouth of the Columbia River.

Simon Fraser had descended the Fraser River to its mouth in 1808 and found it to be impossible as a trade route to the Pacific coast. Of the Fraser Canyon he wrote, "We had to pass where no human beings should venture; yet in those places there is a regular footpath impressed, or rather indented upon the very rocks by frequent travelling. Besides this, steps which are formed like a ladder or the shrouds of a ship, by poles hanging to one another and crossed at certain distances with twigs, the whole suspended from the top to the foot of deep precipices and fastened at both extremities to stones and trees, . . ."

1. Shuswaps Fort was the name given to the post by the Pacific Fur Company in 1812 when it was located on the south side of the Thompson River at the confluence with the North Thompson. The North West Company built a fort on the north side of the Thompson River and it was known as "Thompsons River." In 1842 a new fort was erected on the west side of the North Thompson River and the name was changed to "Kamloops."—E. P. C.



The chief brigade trails are shown on this map, but not A. C. Anderson's route of 1846 from Kamloops to Langley via the Lillooet River and Harrison Lake.

In 1813 communication was established by the North West Company between the Columbia River Department, to which Kamloops belonged, and the posts in New Caledonia. On May 13, John Stuart, accompanied by six Canadians and two natives, left Fort St. James on Stuart Lake to explore a route to the Columbia River. In his diary, D. W. Harmon, at Fort St. James recorded that, "Should Mr. Stuart be so successful as to discover a water communication, between this and the Columbia, we shall, for the future, obtain our yearly supply of goods by that route, and send our returns out that way." Later he records, "Mr. Stuart writes, . . . that, after descending this river, [Fraser] during eight days, he was under the necessity of leaving his canoes, and of taking his property on horses, more than one hundred and fifty miles, to the above mentioned lake [Okanagan]."

Harmon's entry of October 18, 1814, states: "This afternoon, I was agreeably surprised by the arrival of Mr. J. La Roque and company, in two canoes, laden with goods, from Fort George, at the mouth of the Columbia River, which place they left, the latter part of last August."

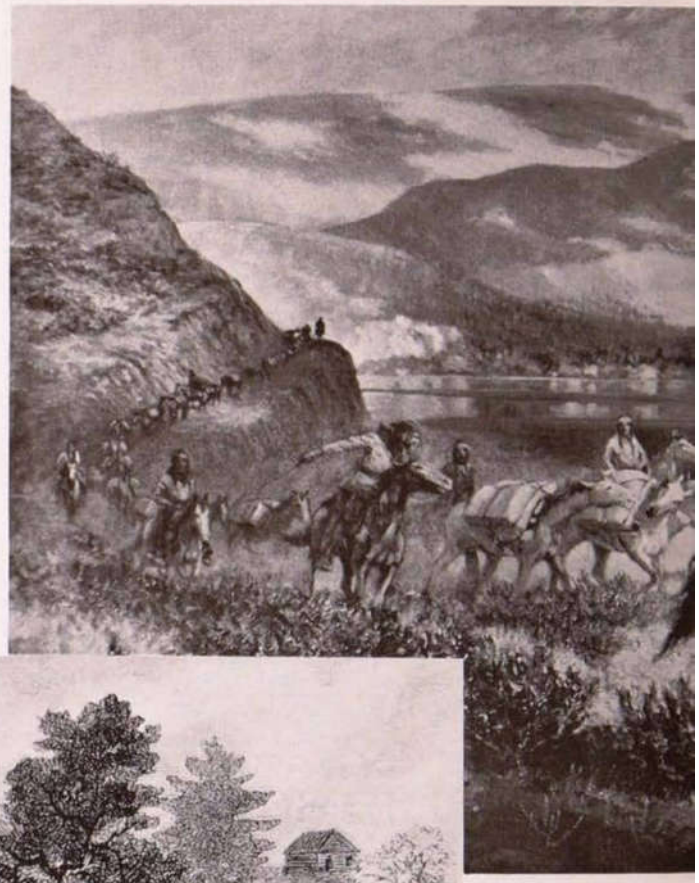
The intention to supply New Caledonia from Fort George was not finally adopted, however, until after the union of the North West Company and the Hudson's Bay Company in 1821.

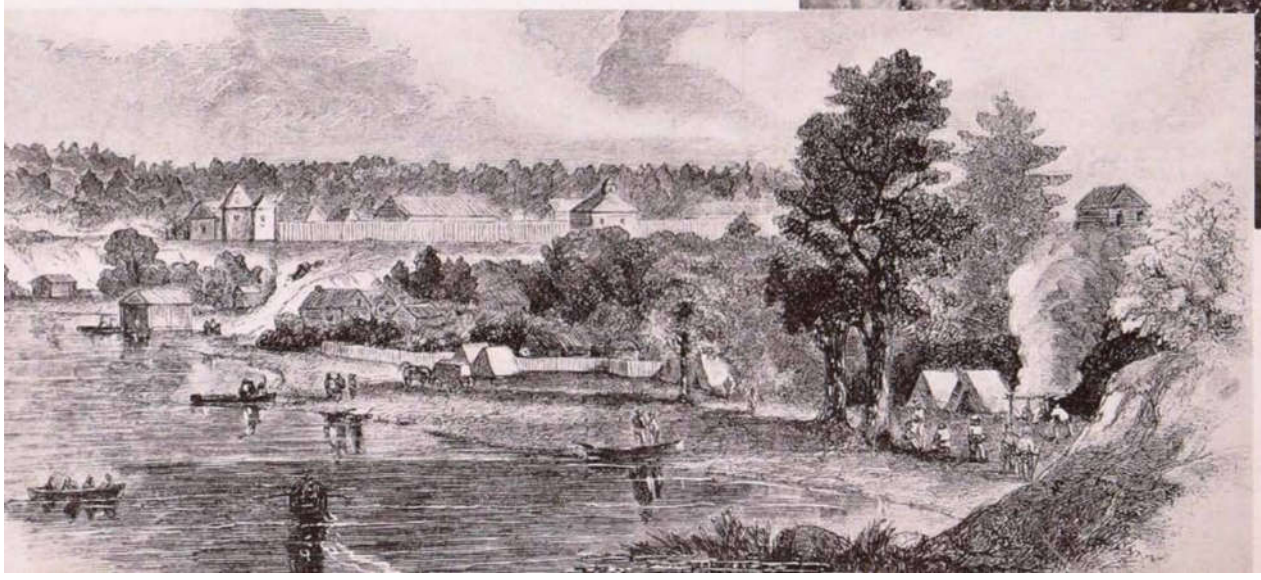
Sir George Simpson crossed Canada from York Factory to Fort George by the Athabasca Pass in 1824 and, in spite of the experience of Simon Fraser in 1808, he was so certain that the Fraser River could be used as an artery of trade that, in December 1824, he sent a party under Chief Trader James McMillan to examine the possibilities of establishing a post at its mouth. Fort Langley was built in 1827 as the outcome of these efforts.

Nothing further was done to change the fur trade from the Columbia to the Fraser until, during his visit to the Pacific coast via the Peace River pass in 1828, Simpson descended the Fraser by boat and canoe to Langley. In March 1829 he reported, "I should consider the passage down, to be certain Death, in nine attempts out of Ten. I shall therefore no longer talk of it as a navigable stream, . . ."

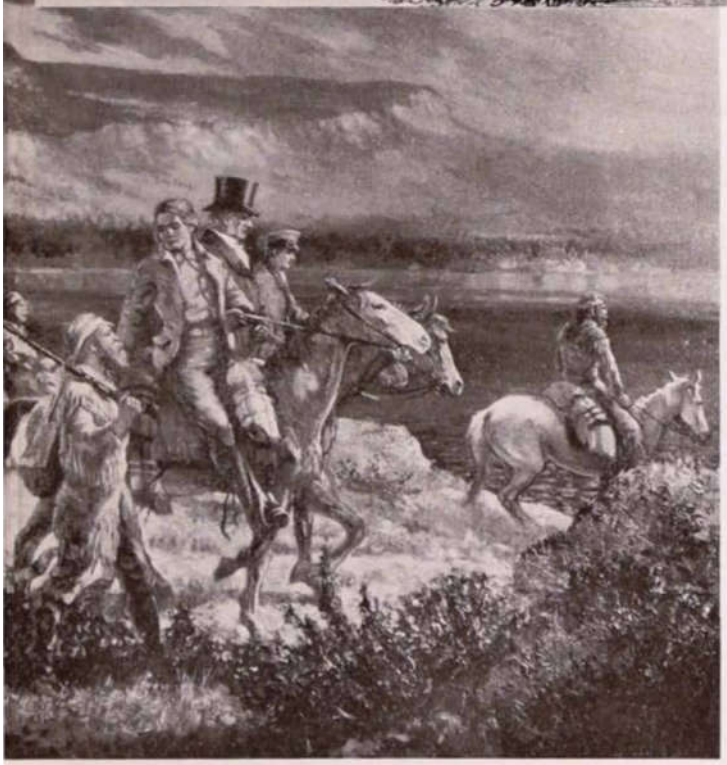
In 1826 the supplies for New Caledonia were sent from Fort George along with those for the posts of the Columbia. From Kamloops horses were used to Fort Alexandria and then canoes to Fort St. James. The route from Fort George to Fort Alexandria by the Okanagan and Kamloops was followed until 1847. The following year a route was forced through the Cascade Mountains from Kamloops to the Fraser River and thence to Fort Langley and Victoria, which had become the headquarters on the Pacific coast.

The first of the brigade trails—from Fort McLeod to Fort St. James—was some eighty miles in length and was used to avoid the longer and difficult route up the Crooked River to Summit Lake, by portage to Fraser River, then up the Nechako and Stuart Rivers to Fort St. James on Stuart Lake. The trail followed a direct line southwesterly from McLeod Lake to the southern end of Stuart Lake. Back-packing and dog sled were the early means of transport along this route. This trail was in use by the fur traders soon after the posts were established on Stuart and





Fort Langley about 1858. Royal Ontario Museum



Above: H B C fur brigade passing down Okanagan Lake. From the painting by John Innes at the University of British Columbia. Top: Fort Yale at the time of the Fraser River gold rush. Sigmund Samuel Canadiana Gallery, R.O.M.A.

Fraser Lakes in 1806. Harmon recorded that it took four days to travel from Fort McLeod to Fort St. James.

There were three definite stages in the development of the horse brigade trails on the routes between the Pacific coast and Fort Alexandria; the first was from Fort Okanagan on the Columbia River to Kamloops, the second from Kamloops to Fort Alexandria and the third from Kamloops to Yale and later to Hope.

The brigade trail from Fort Okanagan at the confluence of the Okanagan and Columbia Rivers (in what is now the State of Washington), to Kamloops, a distance of about 225 miles, was first used by men of the Pacific Fur Company in 1812 and followed continuously until 1847. Horses were used on this trail from the beginning, it being recorded that Alexander Ross arrived at Kamloops from Fort Okanagan in May 1812 with sixteen horses.

In 1842 John Tod built a new fort at Kamloops on the west side of the North Thompson River, and the southern portion of the trail to Fort Alexandria was re-located to follow the north side of Thompson River and Kamloops Lake to and along Copper Creek and across Deadman River to Brigade Creek and Loon Lake, thence northerly across Bonaparte River to the west end of Green Lake and on to join the original trail at the west end of Horse Lake. This route was used until the Cariboo Road was completed in 1865.[2]

The last of the horse brigade trails to be built was from Kamloops to the head of navigation on the lower Fraser River.

The Fraser, as noted above, had been examined as a route of communication to the coast by Simon Fraser in

2. David Douglas travelled with a party taking a shipment of cattle from Fort Okanagan to Fort Alexandria in 1833 and a book containing his sketch maps of the route followed is on file in the Provincial Archives, Victoria. These maps show the route to be along the south side of Thompson River and Kamloops Lake, then crossing to the north side of the river and up the Bonaparte River and along Loon Lake. There appears to be no other evidence that this route was ever used by the brigades and it is assumed therefore that it was more suitable for cattle driving and was used only for that purpose —E. P. C.

1808 and Sir George Simpson twenty years later, with negative results. The Oregon Boundary settlement in 1846 and later, the "Cayouse War" (an Indian uprising in Oregon Territory) made it imperative, however, that an all-British route be located to the Pacific coast. In anticipation of this situation Fort Victoria had been established on the southern end of Vancouver Island in 1843 as headquarters for the territory west of the Rockies.

In his *History of the North West Coast*, written in 1878, Alexander Caulfield Anderson, a valued servant of the Hudson's Bay Company, commented, "I judged it prudent therefore, to endeavor to provide. . . . some route of access to the sea which might supplement and perhaps eventually supersede our usual route of communication, via the Columbia River . . . I accordingly, wrote to the Governor (Sir George Simpson) in council at Norway House . . . and requested to be allowed . . . to explore a route to Fort Langley on the lower Fraser through a tract of country at that time practically unknown." This proposal was accepted and on May 15, 1846, Anderson set out from Fort Kamloops with a party of five men to examine a route west of Fraser River from Lillooet to Harrison Lake. He reached Fort Langley on May 24.

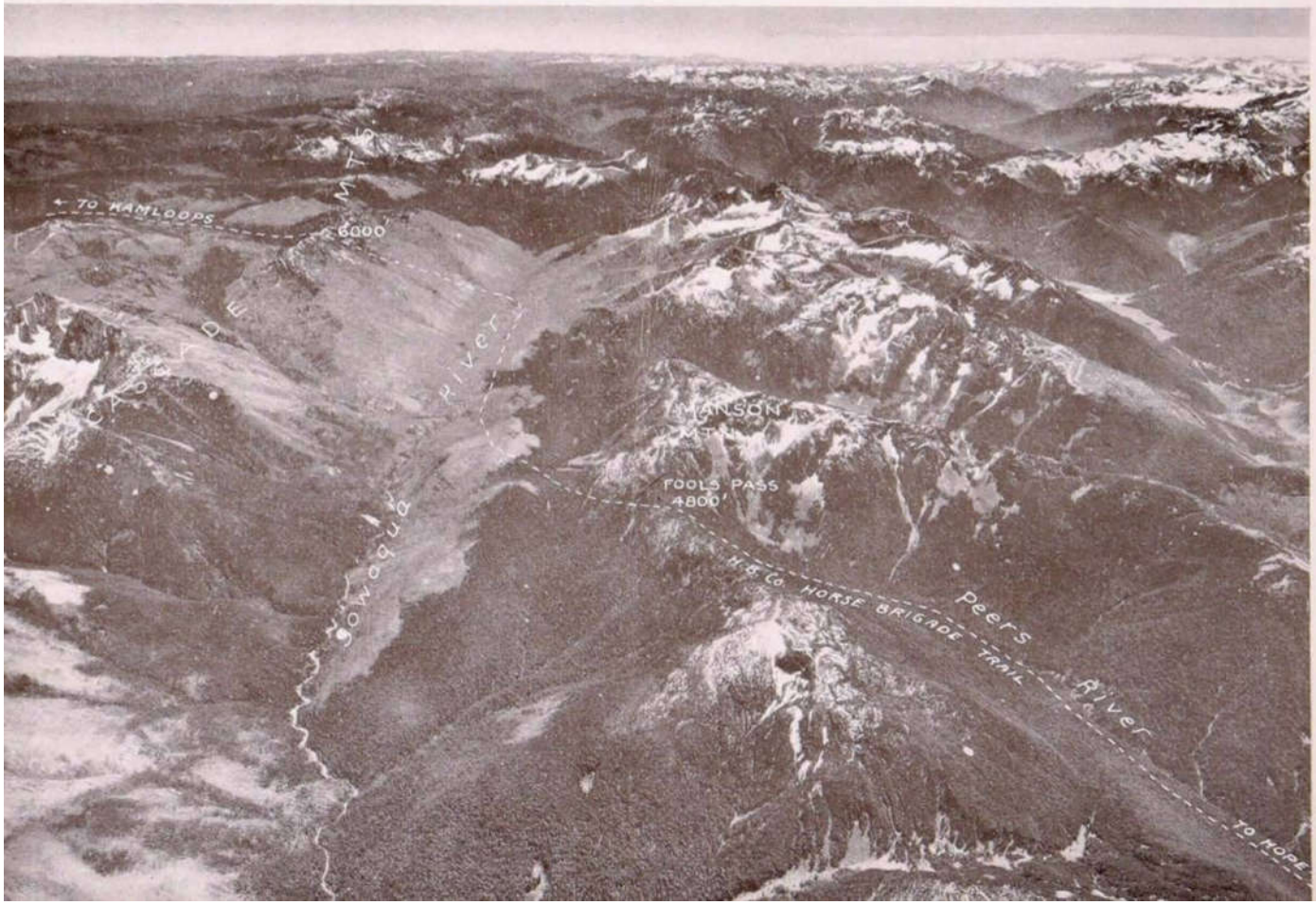
The return trip, which began on May 28, was up the Fraser to the mouth of the Coquihalla River, where Fort Hope was later built, easterly along the route now followed by the new Hope-Princeton Highway to the Skagit River and then in a more or less direct line northerly to Kamloops, arriving there on June 9.

The following year Anderson was instructed to explore a route through the Cascade Mountains by way of Thompson and Fraser Rivers to the Indian village of Spuzzum. Not finding a suitable trail, he did, however, find one farther to the south—from Spuzzum across the mountains to join the route he explored the year before at Nicola Lake.

From Spuzzum, where the Fraser was crossed, a trail was built to the head of navigation where Fort Yale was erected as a junction point between land and water travel. This route from Kamloops to Yale was used in 1848 and for the outward brigade of 1849, but proved so disastrous that it was abandoned for the return brigade of 1849 in favour of one which closely paralleled Anderson's return route of 1846. Although beset by many difficulties and hardships the horse brigades followed this route to Kamloops until, like the trail to Kamloops from Alexandria, it also was superseded by the Cariboo Wagon Road.

The first of the Canadian fur traders to see horses west of the Rockies was Simon Fraser while on his trip of exploration down the Fraser River in 1808. At a large Indian village near the present site of Lytton he found the natives in possession of some. This apparently, was as far north as horses had been brought at that time. It is believed that they first reached the Columbia some time prior to 1800. The fur traders first obtained their animals in trade from

Part of the brigade trail from Fort Hope to Kamloops is shown surprinted on this aerial view looking southeast, and taken 17,500 feet up about six miles east of Hope. B.C. Govt.



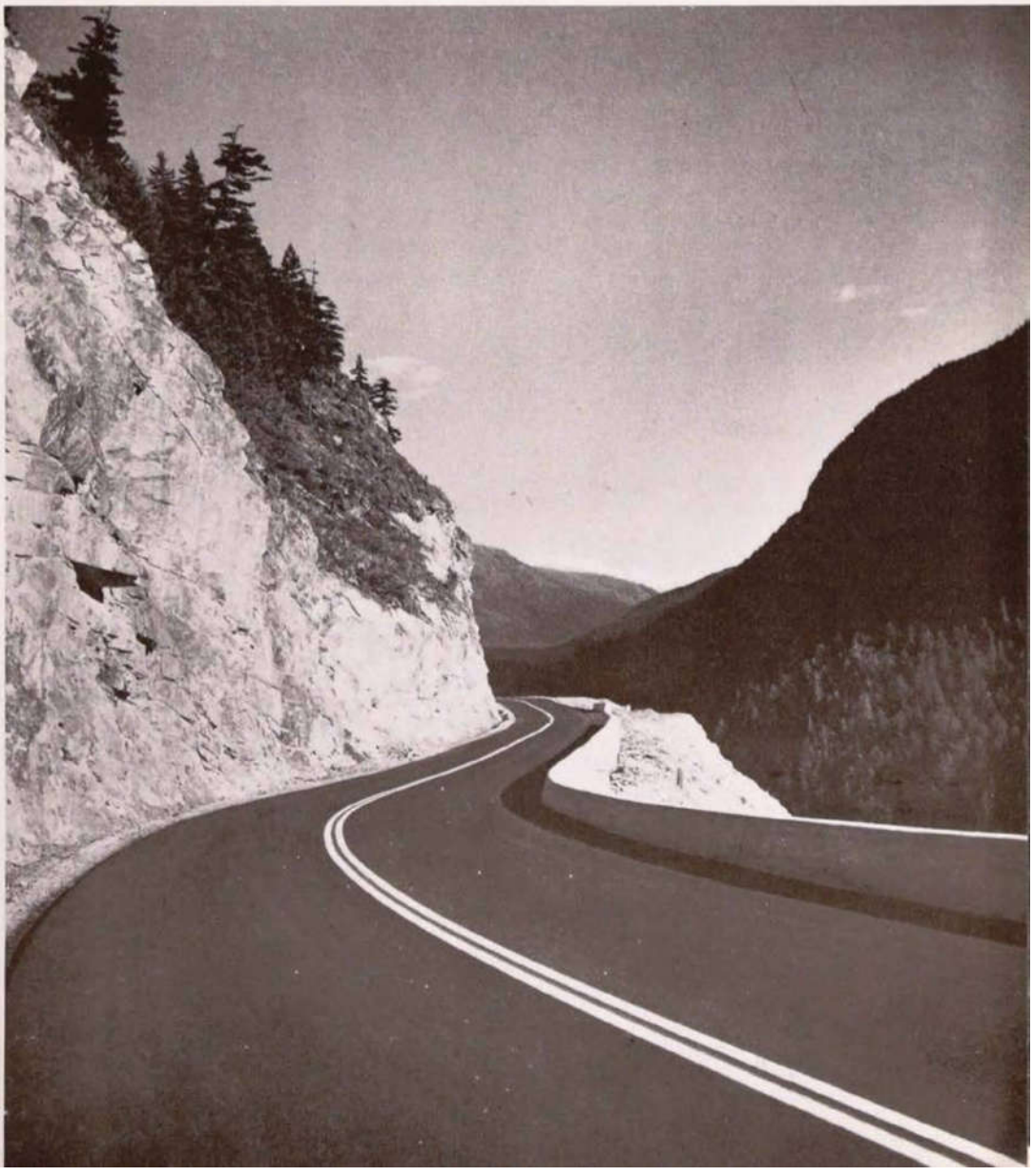
the Indians, but later also raised them on the Company's farm at Kamloops and probably at Fort Alexandria.

John Work, at Fort Nez Percés, recorded in his journal of July 17, 1826, "I am directed if possible to purchase at least 60 or 70 horses, more if possible, . . . " and on 3rd August, ". . . Mr. Douglas proceeded on his journey to Okanagan with the 59 horses allotted for that place & N. Caledonia, & we pursued our route with 20 horses for Ft. Colville." Thus were purchased from the Indians horses for the brigade to New Caledonia.

Reporting on the Indians at Fort Nez Percés Simpson wrote, that the Company depended upon them principally for an annual supply of about 250 horses. From 200 to 300 were used in the brigade between Fort Okanagan and Kamloops, but the first brigade from Kamloops to Yale in 1848, which included the returns from New Caledonia, Thompson River and Fort Colvile, consisted of "about 400 horses (many of them unbroken) and in all about 50 men." This was truly an enormous train to lead through a wilderness inhabited only by Indians.

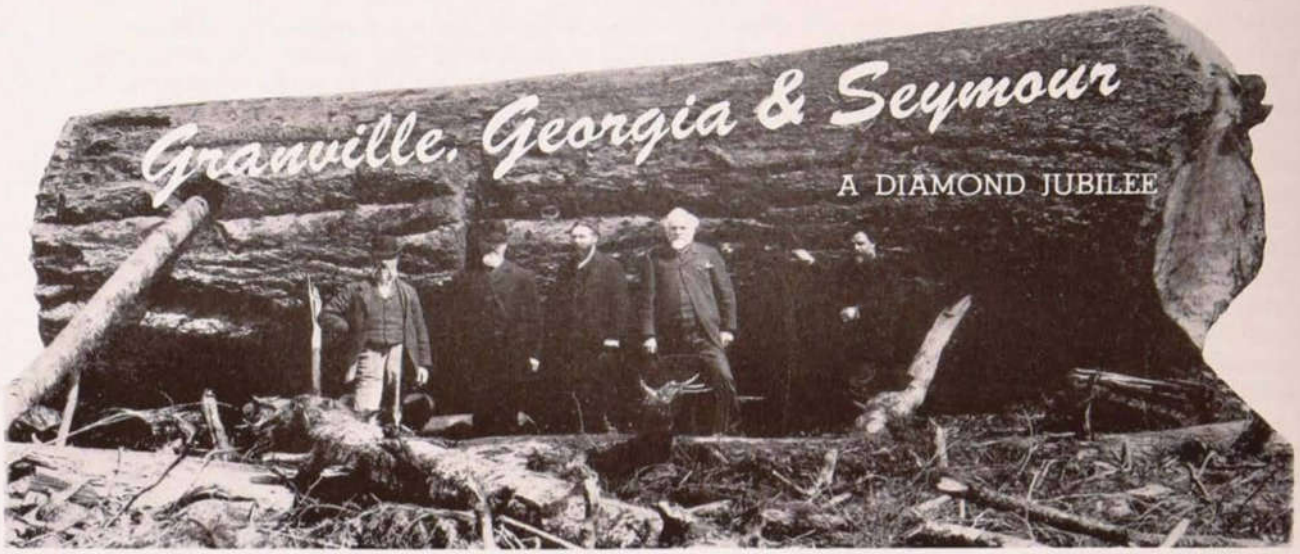
Nor were tragedies and disasters unknown to travellers of those days. It was near the summit of the trail over the Cascade Mountains in July 1855 that Paul Fraser, the son of Simon Fraser, met his death by a tree falling on him when asleep. Lieutenant H. S. Palmer of the Royal Engineers who travelled over the trail in 1859 wrote, "a neat pile of rough hewn logs mark his lonely grave." He also reported finding the skeletons of sixty or seventy horses on Manson Mountain, east of Hope. "Traces of their deaths are still visible, and in riding over the mountain, and more particularly on its eastern slope, my horse frequently shied at the whitened bones of some one of the poor animals, who had broken down in the sharp struggle with fatigue and hunger."

The era of the horse brigades came to an end with the building of the Cariboo Road up the Fraser Canyon and on to the gold mines of the interior, but for over fifty years the brigade trails had served as a link in the trade route from the upper Fraser to the Pacific, and we look with admiration on the men who pioneered in the exploration and trade of British Columbia under the most difficult conditions that Nature could place in their paths. ◆



A far cry from the trails of the plodding packhorses is this modern motor road—a stretch of the Hope-Princeton Highway which covers part of Anderson's Hope-Kamloops trail of 1846.

B.C. Travel Bureau

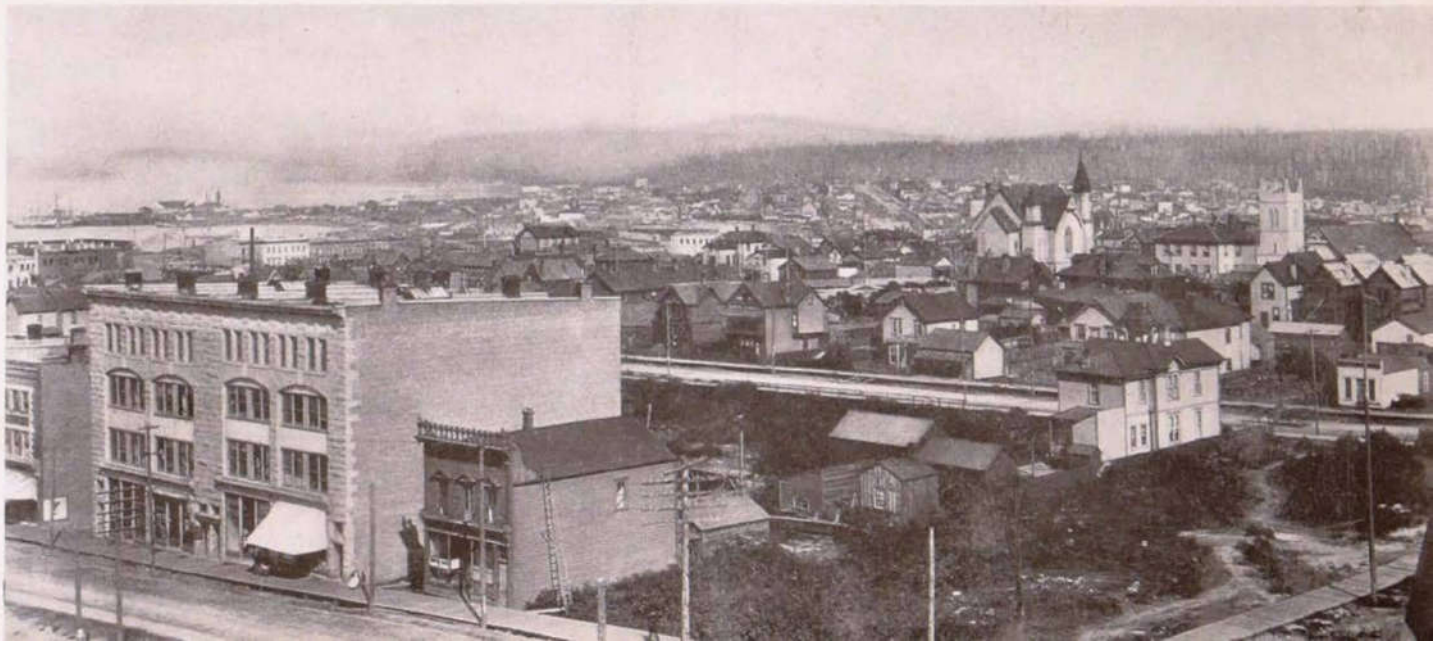


1886. THE TREES COME DOWN. In the year of Vancouver's incorporation, this famous log, 14 feet 4 inches in diameter, lay on the spot where thousands daily enter the present store on Georgia Street. Vancouver City Archives.

Sixty years ago, in Vancouver, B.C., the Hudson's Bay Company erected a store on a vacant lot. What has since happened to that lot can be seen in these pictures.

VANCOUVER, the metropolis of British Columbia, the home of more than half a million people is the third largest city in Canada. Yet only 70 years ago the place where it stands was a forest. Only seven years after that, much of the forest had been cut down, and houses, churches, and business blocks had taken its place—as will be seen from the picture below. Even then, one of the busiest corners of the present day city was a vacant lot. In 1893 the Hudson's Bay Company, which had been doing business down near the waterfront for six years, erected a brick store on this lot at the corner of Georgia and Granville Streets. As the city grew the store had to be enlarged twice, and before World War I started, the first unit of a fine new store was rising farther along Georgia at the corner of Seymour. In 1925-6 the old brick building was demolished to make way for a large extension of the new one, and in 1948-9 another extension was made down Seymour Street to form the great store of today.

1890. THE BUILDINGS GO UP. This picture of the growing city was taken from the Hotel Vancouver, and shows in the foreground the vacant lot between Granville (left), Georgia (right) and Seymour, now covered by today's great department store. Vancouver City Archives.



1893. A STORE RISES.

On the lot at the corner of Granville (left) and Georgia, the Company's second Vancouver store begins to take shape. It opened for business on September 21st that year.

Vancouver City Archives.

1914. AND A LARGER STORE.

Farther east along Georgia, at the corner of Seymour (right) the first unit of a new store rises. The old red brick store stands on the left.

1953. THE STORE TODAY.

Taken from the same place as the 1914 photo, this picture shows the Company's store as it appears now, with the most recent extension on the extreme right.

Sockeye from the FRASER

In the restoration of the sockeye salmon to its former abundance, the International Pacific Salmon Fisheries Commission is getting invaluable help from the records of old-time fur traders.

by Roy I. Jackson

ALONG the coasts of British Columbia and the State of Washington fishing is one of the oldest and most important industries. Thousands of men haul millions of dollars worth of fish from the sea each year. Of the many kinds of fish taken none are more interesting and no fishery more closely interwoven with the history of the area than the sockeye* salmon of the Fraser River.

The Indians of the northern interior of British Columbia depended for food on the fresh or dried flesh of the sockeye long before the coming of the white explorers and fur traders. They speared or trapped the fish as they passed up the rivers to the spawning grounds. Game was scarce in

*From the Coast Salish word Suk-kegh.

Alongside a purse-seine boat, a brailer load of Fraser River sockeye is lifted out of British Columbia coastal waters. Don Coltman

the area, moose were nonexistent, deer anything but plentiful. It was natural that, when the fur trade in New Caledonia—as that area was called—began in the first years of the 19th century, the traders should depend very heavily on the annual runs of sockeye for their existence.

Sockeye is one of the five species of salmon found along the Pacific Coast of North America. All salmon are hatched from eggs laid in the gravel bottoms of streams and rivers. The Fraser River basin sprawls over 90,000 square miles of British Columbia's interior, and sockeye salmon spawn in its tributaries at distances from twenty to over seven hundred miles from the sea, in spawning areas which lie at elevations ranging from zero to over 4400 feet above sea level.

After hatching and a year of growth in the huge lakes of the watershed, the young sockeye are strong enough to make the long trip to the sea. There they disappear, dispersed for feeding in the upper layers of the Pacific. Four years—almost to a day—after their parents left the sea, the new generation turns toward the coastline and the river's mouth. The sockeye are now rich in fats, proteins and energy, for they must travel many hundreds of miles against a rushing river with no further feeding. Stored energy—fuel—must be sufficient for as much as thirty days of steady swimming and twenty days more of frenzied hiding, fighting, digging and spawning in the parent stream before death ensues—for every Pacific salmon dies after its spawning migration.

Like all natural resources, salmon can be depleted by unwise exploitation. Failure to determine and apply the fundamental principles for protecting the brood stock means that the catch will soon decline. Fishermen of Canada and the United States found this to be the case on the Fraser River, one of the best producing salmon streams in the world. There is no more intensive, diversified and complex fishery for salmon anywhere than the one engaged in catching Fraser River sockeye. Thousands of men and thousands of boats on both sides of the International Boundary combine to comb the waters of the Swiftsure Bank, the Juan de Fuca Strait, myriad passages through the San Juan and Gulf Islands, and the first fifty miles of the Fraser itself. In the two months of an average season, peak runs may occur on only a few days. The sockeye must run a gauntlet of purse seines, traps, reefnets, gillnets, more purse seines and more gillnets before they reach the fishing boundary at the town of Mission and find relief. So that of each one hundred sockeye that enter the fishing area, less than twenty emerge and escape up the river to reproduce their kind.

The huge sockeye catch of 1913, which would wholesale at $90,000,000 today, marked the end of an era. In that year the millions of fish that escaped the nets, in spite of the enormous catch, found their way blocked by a torrential rapid formed at Hell's Gate canyon.

At this celebrated canyon, located between Spuzzum and Boston Bar about 140 miles from the Fraser's mouth, the granite walls stand only 115 feet apart, and the river is deeper than it is wide. One one side runs the Canadian Pacific Railway, and on the other, the Canadian National. During construction of the railways, great masses of rock were sent cascading into the river, almost choking the already narrow canyon, and the salmon, which had found the Gate difficult enough to pass in its natural state, now found it almost impassable. Weary with their ascent of the turbulent river, they died quietly and obscurely in the deep canyon, or spent themselves in passing so that they died in the long hard miles remaining above the gate.

As a result, their numbers in the years following 1913 went steadily down. Two cycles later, in 1921, the catch had fallen to six percent of what it had been in 1913.

But the block at Hell's Gate, though vigorously attacked by the government, remained unrecognized year after year as a destructive throttle on the runs of sockeye. If it had been marked by an obviously impassable waterfall, the situation would have been remedied far sooner. Fishermen of both countries pressed their governments for action, and in 1937 Canada and the United States ratified a treaty for the purpose of restoring and maintaining the catch of Fraser River sockeye for the equal benefit of the fishermen of each nation, with all costs to be shared equally.

The treaty established the International Pacific Salmon Fisheries Commission on which three men represent Canada and three the United States. These men, serving without salary, meet on numerous occasions each year to supervise the activities of a professional staff and to prepare reports on problems and progress for the sponsoring governments. The Commission, through research, regulation, and construction, is required to restore the yield of Fraser sockeye to the maximum possible level and to arrange the closed seasons so that fishermen from each country take an equal number of fish.

This is a complex task, loaded with research and management problems. The first years of the Commission's research were devoted to seeking measurements of the catch, escapement, migration routes and times, location and extent of spawning grounds and many other basic facts.

Careful, time-consuming studies were made of the success or failure of sockeye in passing through the roaring, churning torrent at Hell's Gate where great trees are pulled out of sight to reappear a hundred yards downstream. These studies—involving the marking and tracing of tens of thousands of adult sockeye—showed that Hell's Gate was the key to the migration and survival of the bulk of the Fraser sockeye.

Four fishways were accordingly constructed at Hell's Gate, two on each bank. These huge concrete structures, ranging in length from 120 to 460 feet, now provide quiet-flowing bypasses around the turbulent rapids. With a depth of 47 feet, they are visible at low and intermediate water stages, but in the spring and early summer they may be thirty feet or more beneath the surface. When the water of the river is below the level of the main fishway floors the sockeye can pass successfully up the natural channel. At all other stages they must use the fishways to pass Hell's Gate.

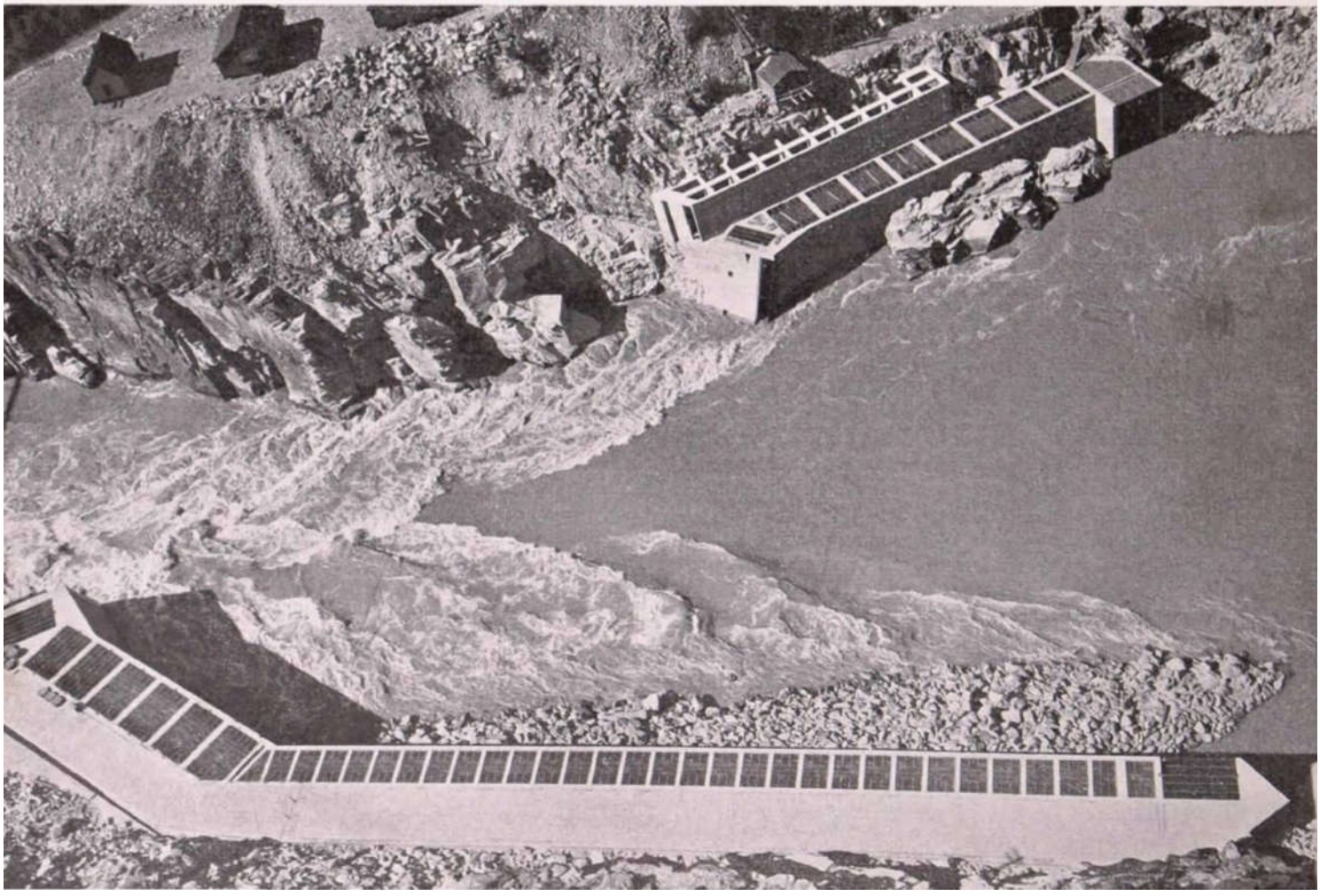
Hell's Gate—key to the migration and survival of the Fraser sockeye—before the fishways were built. Here the whole force of the mighty Fraser rushes down a channel only 115 feet wide—and here a great part of the Fraser salmon died obscurely while trying to fight their way upstream. B.C. Govt.

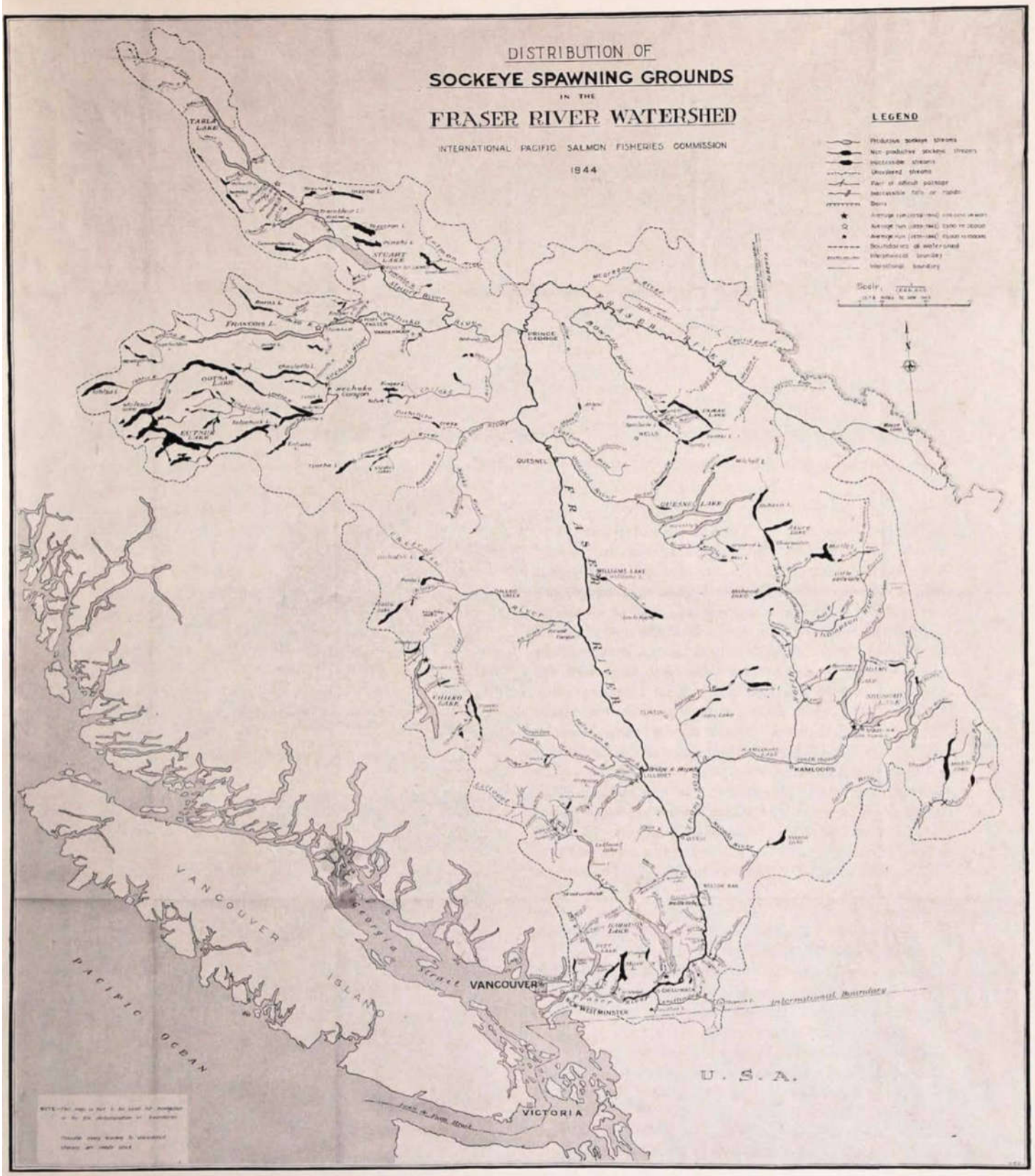
The concrete fishways built at Hell's Gate on the Fraser by the I.P.S.F.C. have accomplished wonders in enabling the salmon to get upstream to the spawning beds. The longest measures 460 feet. Sockeye enter at the left hand end and make the ascent by easy one-foot stages.

Now, though other river systems are declining in salmon production with far higher proportionate "escapements," production on the Fraser has begun to expand. The trend toward depletion has been reversed, and the Fraser is headed back toward the abundance that the fur traders and Indians depended on—and missed so sorely when natural cycles brought scarcity.

With the Fraser River restored physically to the ease of passage it offered salmon a century and more ago, the Commission found time to turn more attention to the record of the distant past. That past, if accurately recorded, is the best measure of what the future might hold for the sockeye of the Fraser. Many "races"—as the stocks of sockeye reproducing in different geographic areas of the watershed are called—had been so depleted or exterminated that only history could indicate what goals to set. The problem is not the simple one of moving sockeye in random fashion, like sheep in a field, from one tributary stream to another. Each geographic stock or race fits its own tributary stream so closely in the matters of migration time, energy reserve, and adaptability, that it can only be transplanted with great difficulty, if at all.

In its investigation of the time of arrival, numbers, and location of many races of sockeye on the Fraser, the commission has found the London Archives of the Hud-





The Fraser River watershed sprawls over 90,000 square miles of British Columbia, and sockeye salmon spawn in its tributaries as far as 700 miles from the river's mouth. Some of these fish climb as high as 4,400 feet above sea level to deposit their eggs. In this monochrome reproduction of a coloured map the non-productive streams and the inaccessible streams are indistinguishable. Hell's Gate is seen about an inch north of the 49th parallel. Now that the Nechako River has been dammed, the lakes it drains have been cut off from the Fraser basin.

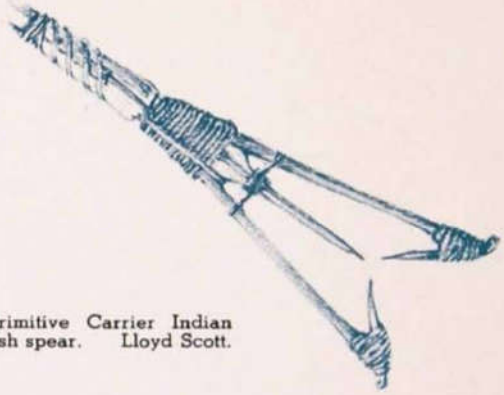
Spearing salmon at a weir on the Stuart River near Fort St. James, 1891. James McDougall.

son's Bay Company to be an invaluable source of detailed, clearly recorded facts. The records are fascinating and irreplaceable eye-witness accounts of a potentially great fishery in a virgin state. They are helping to set many goals for modern management and restoration of the resource.

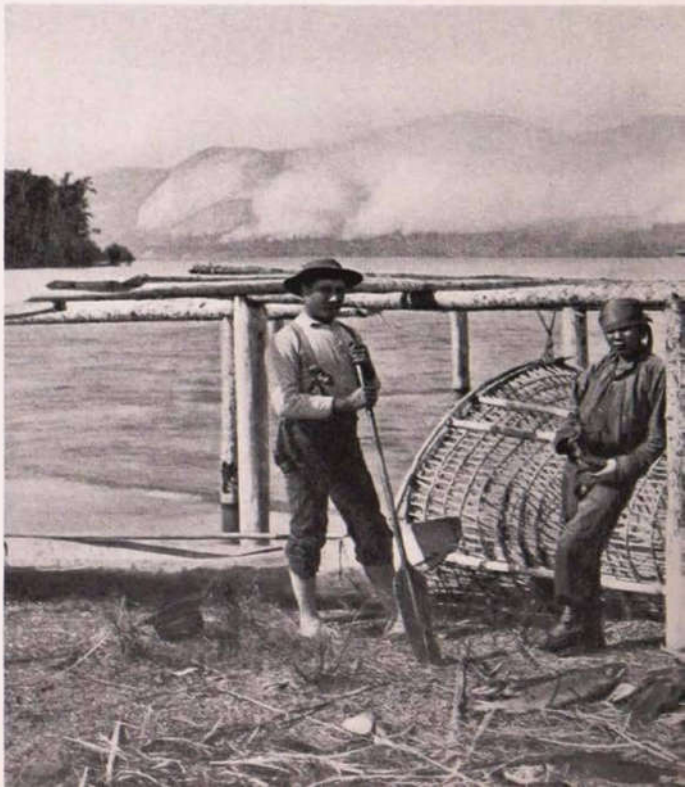
After the union with the North West Company in 1821, the Hudson's Bay Company sent its factors, traders, clerks and voyageurs from the east, into what is now British Columbia to take over the North West Company forts. One of these, Fort St. James, at the outlet of Stuart Lake 600 miles above the coast by water via the Fraser, Nechako and Stuart Rivers, became the headquarters for the fur trade in the vast area known as New Caledonia. The journals and other records kept at the posts in New Caledonia have been painstakingly searched by the Company's archivists at the Commission's request. The carefully prepared extracts tell a closely interwoven story of fur, Indians, salmon, traders and history on the Fraser and its tributaries.

From the outset it was apparent that the trading economy of the Company in that region was based on sockeye salmon. Many quotations from the journals will illustrate this. Indeed the first reference we find is in 1820, when the North West Company was still in charge of Fort St. James. On July 12, 1820, the post journal noted: ". . . Nothing in our nets and if we continue long so, I shall have to stop the Work and send the men to live somewhere for we have but few Salmon in the store and they are not eatable, the best having been picked out in the Spring."

The salmon—sockeye—were caught in traps called weirs or "varvoes," "varvons," or "varves" in the journals. The weirs, as we shall call them, were built in the Stuart River, a mile or two from the fort. Sockeye swimming up the Stuart enroute to their spawning grounds encountered the timber and brush weirs or dams extending across the



Primitive Carrier Indian fish spear. Lloyd Scott.



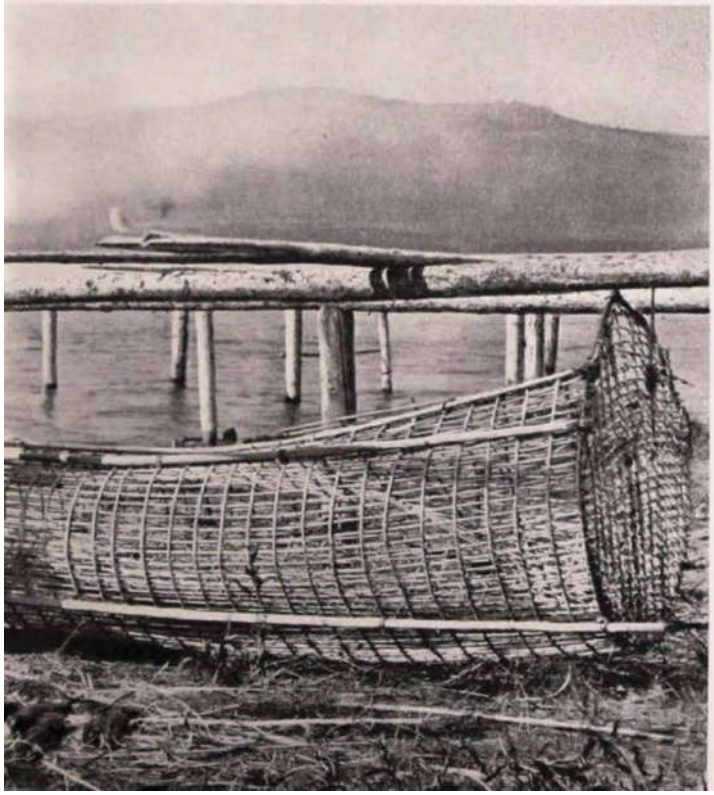
river. Seeking an opening, those which failed to escape entered pockets from which they could be dipped out by the squaws. Similar devices were used elsewhere on the watershed.

Once killed, the sockeye were cleaned, split, and dried in the wind and sun, sometimes with smoke to intimidate the flies. Thus treated the salmon became an article of commerce, and of food for man and beast. It could be stored for years, if kept dry; was portable, durable, nourishing, and quickly prepared by boiling or simply by chewing.

Look what has happened at Fort St. James by August 9, 1820: ". . . . Got 30 fish from Quâ [Chief of the local tribe who later attacked young James Douglas]. . . . he is the only one about the village that can afford to give us something now and then, for the others are all starving and if Salmon does not come up soon we will be in the same condition for our stores are empty and nothing is taken in the nets."

Father Morice estimates in his *History of the Northern Interior of British Columbia* that there were at least one thousand Indians living around Stuart Lake in that early period. Also he points out that salmon was the daily bread of these Indians. In 1836, he says, the various posts in New Caledonia expended the following provisions: 67,510 salmon, 11,941 smaller fish, 781 sturgeon, 346 trout, 2,160 rabbits, 153 ducks, 10 lynxes, 8 marmots, 3 porcupines, 1 swan and 14 dogs. In the year, for thirty men at Fort St. James, thirty-two pounds of venison was available. Moose was unknown in the region. A few potatoes were grown. Flour, rice, beans, bacon, tea and sugar were all but unknown. Dried salmon and cold water was the staple fare for the servants of the Company. The scarcity of anything else in the country and the cost in time and money of carrying goods from Canada or the coast precluded any other diet.

Carrier Indian salmon trap at Fort St. James, 1891. Bush fire in the distance. James McDougall.



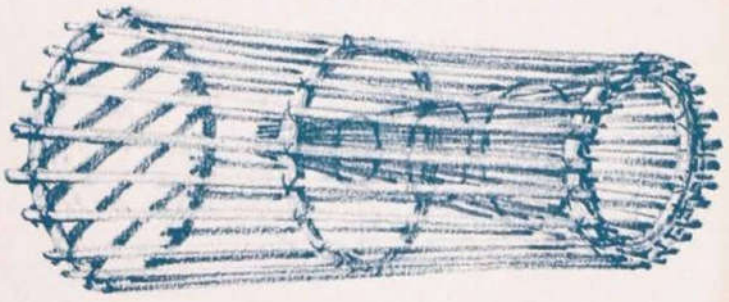
Even in those early times, long before a significant fishery began at the coast, the sockeye did not come in equal abundance each year. Fraser sockeye usually live four years, from egg deposition to death. For that reason each spawning stream gives rise to four separate annual consecutive cycles of sockeye. To take an example—eggs laid in the Stuart district in 1820 gave rise to adults which returned from the sea, spawned and died in 1824. Similarly eggs laid in 1821 provided the adults returning in 1825. A few adults returning as three or five-year-olds provide some mixing. Substantially, however, the cycle is four years and each cycle has its own characteristic abundance in relation to the others. Thus we find that even today one cycle is characteristically very abundant—exceeding all the others combined. This "dominant" cycle usually precedes a moderately large sub-dominant run which precedes two years of complete failure. The cause is unknown but is apparently some interaction through food, predators, disease or parasitism.

Search of the records shows the Commission that even 132 years ago the sockeye of Stuart Lake were dominant on the same cycle that they were 40 years ago. This is astonishing and valuable evidence of the rigidity of the cause of dominance. It indicates that management of the Fraser sockeye must take into account the great natural inequality of the four consecutive annual runs to each area. The "off-years" were years of great scarcity of sockeye. Indians, traders, and even the predatory bears and birds went hungry. Then when the big year came—the year of the dominant run—salmon came in almost countless hordes. The runs in some cases are a thousand times greater than the off-year runs to the same stream.

Returning to Fort St. James: the Outfit of 1823-24—each year's trading venture was called an Outfit and was separately supplied and costs and profits or losses separately reckoned—recorded a general scarcity of sockeye in 1823. In 1824 William Connolly writes on November 7 that: ". . . the entire failure of salmon at this place is an unfortunate tho not uncommon occurence. In such a case however recourse must be had to the Babines and Fraser's Lake for subsistence for ourselves. . . ."

The next day he notes: ". . . From what little I have seen & heard, I am Convinced that one third of the yearly

Model of salmon trap in National Museum of Canada.



Present day Indian family drying sockeye by the old method. The fish are split, boned, scored with a knife, and held flat with twigs.

Outfits are expended in purchasing Salmon or other Fish & paying Indians for their services [as fishermen]. . . . It is no less singular that in a country such as this which abounds with fish, not one Fisherman should be found at any of the Companies Establishments. . . ."

That year, in fact, Chief Trader Connolly charged one of his young newly-arrived clerks, James Douglas, with responsibility for procuring sockeye for the post. That Douglas succeeded well is apparent from an entry for November 1, 1829: ". . . The quantity of that Fish which he [Douglas] procured amounts to 25,200 and they are Secured in a good Cache in an Island a few miles on this side of Tatchi River with a trusty Indian in Care of it. On calculating the expenses incurred in trading this fish it appears that they amount to £13.6.7 being somewhat less than ½d. each. . . ."*

Twenty-five thousand sockeye salmon at a cost of less than forty dollars! Raw sockeye is at least one thousand times more valuable to the fishermen of today.

This first fisherman was later to be knighted as Sir James Douglas, the respected and able head of the Company's Western Department and first Governor of British Columbia.

In 1825 the run of sockeye up the Stuart River was late. However, the traders' despair was lifted when a large run commenced on September 4, and continued for a month. Then salmon came from all directions as the Indians used dried fish to pay their debts, purchase supplies for the coming period of trapping beaver, and even establish credit. Throughout the journal extracts at this time the reader can sense the freedom from tension. Food for the year is assured—business can go on, the Indians will trap beaver instead of lying ill from hunger or occupied only in a search for food.

Chief Trader Connolly says it well: ". . . the time they [the Stuart Lake Indians] consumed for these three years passed [past] in running about to procure subsistence from their Neighbors, Can be devoted, if the weather is favourable, exclusively to the Hunting of Furs. . . ."

Throughout the New Caledonia records of the Hudson's Bay Company the indispensability of the sockeye is witnessed. In 1827 Connolly notes the Indians from Kamloops to Fort St. James, nearly four hundred miles, are "emaciated and starving" and by September his own men ". . . are so scantily fed that they Cannot be employed in any hard duty. . . ."

The year 1827 apparently marked one of the very lean or "off" cycles for the Fraser sockeye. The Chief Trader sums up his problem graphically on October 20:

". . . this quantity [of sockeye obtained at Fort St. James and Fraser Lake] is so very trifling that we may now consider the whole district is dependent upon the Babines [who fished in the Skeena River system] for support throughout the winter, and it being hardly possible for that place to furnish a sufficiency we may therefore make up our minds to bear much misery between this & spring, exclusive of the mortifying Consideration that the want of these wretched salmon puts it entirely out of our power to accomplish the plans I had in view for the improvement of the Trade, and for the Successful result of which I would almost have pledged my head. These bright prospects must for the present be abandoned and all our exertions be used in endeavours to provide the means of preserving our Lives. . . ."

In 1844 the Fort St. James Journal indicates further close ties between the Hudson's Bay Company's endeavours to obtain furs and the abundance of sockeye.

On January 16, Peter Skene Ogden's Journal entry states in part: ". . . Indians [local] going off and the

*Actually nearly eight for a penny

Sycannys [another tribe] very troublesome complaining of starvation and offering Beaver Skins for Salmon which my means will not admit of us."

Not guns or cloth or kettles, but food, which no one could provide.

A correlation between the abundance of salmon and the numbers of fur bearing animals is suggested in the entry for January 24, 1844: " . . . really dull times not even a Martin in the latter there will be a considerable diminution on last year. When a general failure of Salmon takes place in the District the returns in small furs will invariably fail. . . ."

We have stressed Fort St. James in these comments because it was the most important of the Company's posts in New Caledonia. The records show a similar dependence on sockeye for trade and survival at Forts McLeod, Fraser, George, and Connolly and at Babine, Alexandria, and Thompson's River (Kamloops).

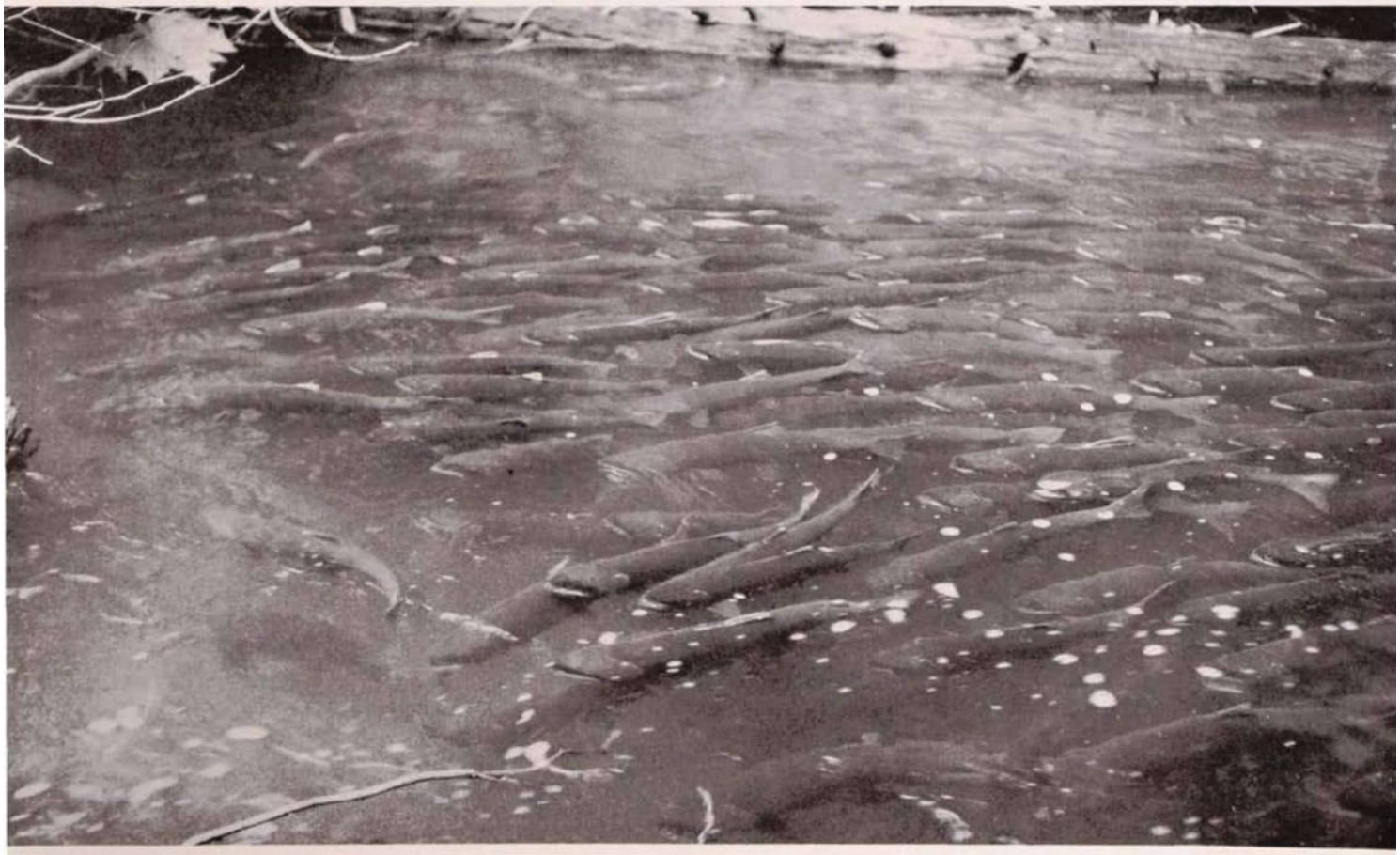
Even on the Coast, salmon figured largely in the Company's trade, and by 1835 it was shipping three to four thousand barrels a year of salt salmon to the Hawaiian Islands. On the Columbia River likewise salmon were important to the Company's trade at Fort Vancouver, but not nearly so vital as on the Fraser.

Through these early years of the nineteenth century there were conflicting claims for various parts of the west coast of North America. The boundary between Russian and British claims was established by the Treaty of 1825 along the 54°40′ N. Lat. line which strikes the southern tip of what is now Alaska. The United States began to press its claim for the lands along the coast north to 54°40′ —a claim so vigorous and popular in the U.S. that it led to the slogan "54-40 or fight." Success of the claim would have left the Canada of the future without access to the Pacific, and the lands of the United States and Russia joined at the 54°40′ parallel. However, after prolonged negotiation and threats of conflict the Oregon Treaty was signed in 1846 and the boundary set at the 49th parallel. Canada was left with a western window to the sea.

The story is almost complete—the British claim had rested squarely on the exploration, trading, and settlement of the Hudson's Bay Company. That Company, pushing over the Rockies from the prairies had spread thin but strong lines of trade westward from Fort St. James. Couriers and brigades travelled the rivers which radiated north, west, east, and south from this area. In this case trade led the flag. (See W. K. Lamb, *Beaver*, March '46.)

It seems a fair conclusion that the sockeye salmon of the Fraser—on which chief factor, clerk, labourer and Indian alike depended for existence—thus played a vital role in making British Columbia part of Canada. And now the Hudson's Bay Company's record of their long-ago struggle to survive and trade, helps the International Salmon Commission carry out the covenant between Canada and the United States for restoration of that salmon, which helped open the door of an Empire. ◆

Sockeye schooled and waiting to spawn in the waters of Forfar Creek. These fish have passed the Fort St. James Indian fishery in their 670-mile upstream journey.



BABY IN BASKET CRADLE

STONE KNIFE AND SCRAPER

HORN TWEEZERS
WOODEN COMB

THE

WIDOW CARRYING HUSBAND'S BONES

THAT spectacular area of lakes and forests in central British Columbia, in the drainage basins of the upper Fraser and Skeena Rivers, was the home of the Carrier Indians, the most numerous, important, and progressive of the northern Athapascans. Their name, Carrier, came from the custom widows had of carrying the bones of their cremated husbands on their backs in mourning. They were first visited by Mackenzie in 1793 and the first trading post in their country opened at Fort McLeod in 1805. Father Morice reported about 1,000 Carriers in 1905 and said they were increasing; there were about 2,000 in 1944.

They were a semi-sedentary people living in permanent villages which they left now and then for organized hunting and berrying expeditions. In winter, some at least lived in half-underground houses which they adopted from the Shuswap. In summer, plank dwellings not unlike those of the coast tribes, but smaller, were used.

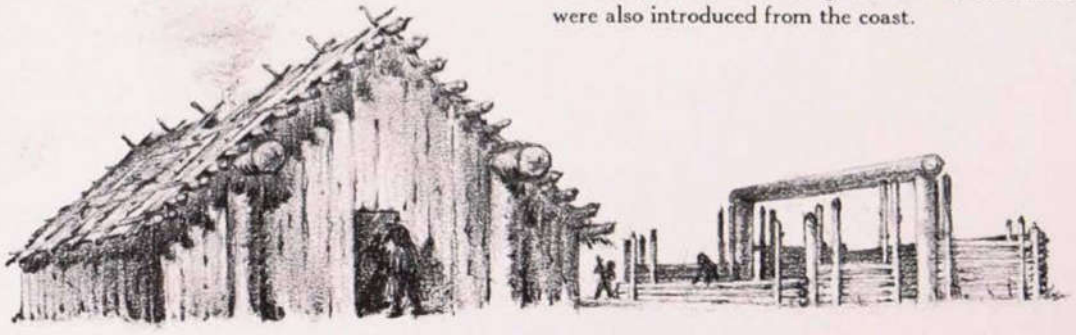
Their canoes were of birch bark and they used them extensively on the waterways that seam their country. Dug-out canoes were also used. In pre-European days they had no knowledge of snowshoes or toboggans and so hunted but little in winter, living on the quantities of dried salmon put up during the summer.

Fish was their staple food, but they gathered quantities of berries and roots, and hunted moose and other large mammals. Each band had its own well-defined hunting areas and berry patches and rights to these were seldom violated. Cooking was done in birch bark vessels with hot stones.

Clothing was largely of skins but in warm weather the men often went nude and the women felt they needed but little more. Warfare was fairly frequent and the Carriers made armour, either of slats of hard wood laced together, or of thick coats of moose hide to which a layer of small stones had been glued. They also used shields, and some lashed a sharp point to one end of a bow to make a spear.

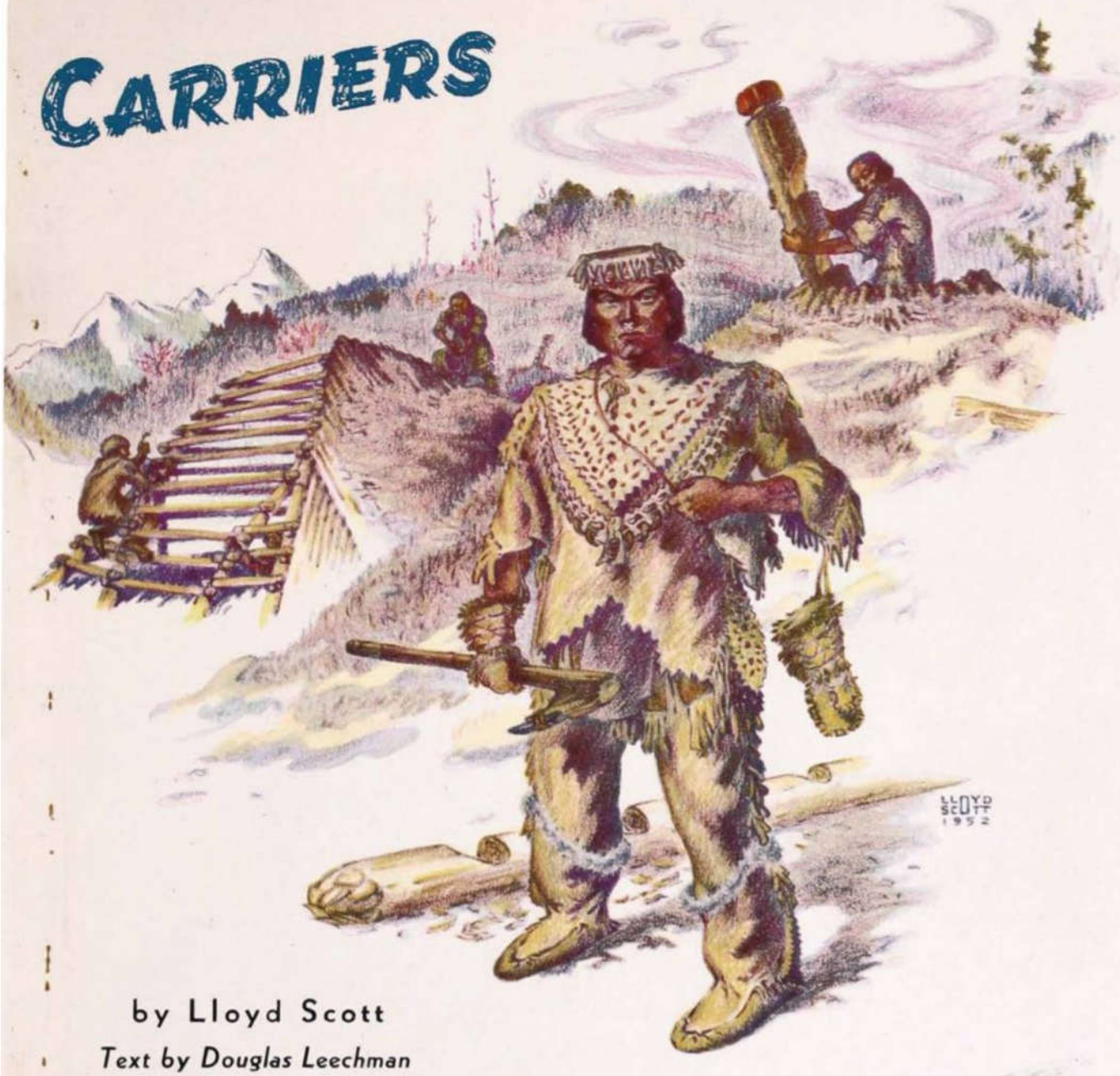
The Carriers in the west had close affiliations with the coast people and adopted many of their customs including the use of masks, labrets, Chilkat blankets, and such secret organizations as the Cannibal Society. Potlatches were also introduced from the coast.

CEREMONIAL HEADDRESS
BEARCLAW HEADBAND



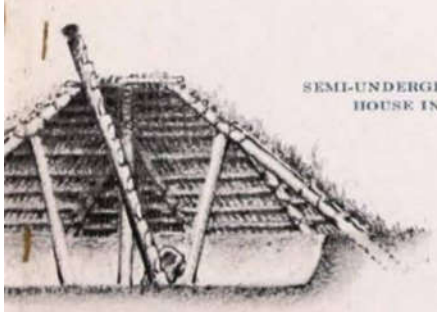
COMMUNAL HOUSE AND SMALLER LODGE

CARRIERS



by Lloyd Scott

Text by Douglas Leechman



SEMI-UNDERGROUND WINTER HOUSE IN SECTION

WINTER HUT

AN ERA CLOSES

By Norman Soars

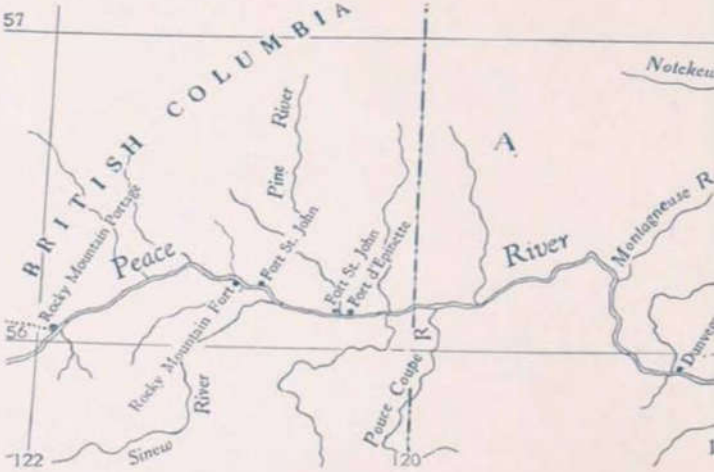
The "Watson Lake" under Capt. J. P. O'Sullivan starts out from Peace River, Alberta, on her final voyage along the historic Peace river, September 21, 1952.

The last voyage of the "Watson Lake" in September 1952 brought to an end 160 years of fur trade transportation on the Peace River.

FROM Hudson's Hope to Fort Vermilion on the Peace the news of the withdrawal of the last of the Hudson's Bay Company's boats must have come as a shock, for, to one who had lived for many years on the banks of the River, it meant the end of an era of romance and adventure, with a tradition of service and hardship.

For a hundred and sixty years, from the time of the first birch-bark canoes of the North West Company to the last trip of the *Watson Lake*, it has been a story of great men, explorers and voyageurs, traders and missionaries and pioneers. The Mackenzies, St. Germains, Bourassas and Shaws, whose descendants still live on the banks of the Peace, were the men who, when the River was the only highway of that part of the North, blazed the trail for the present-day pioneers, with their bull-dozers, airplanes and trucks.

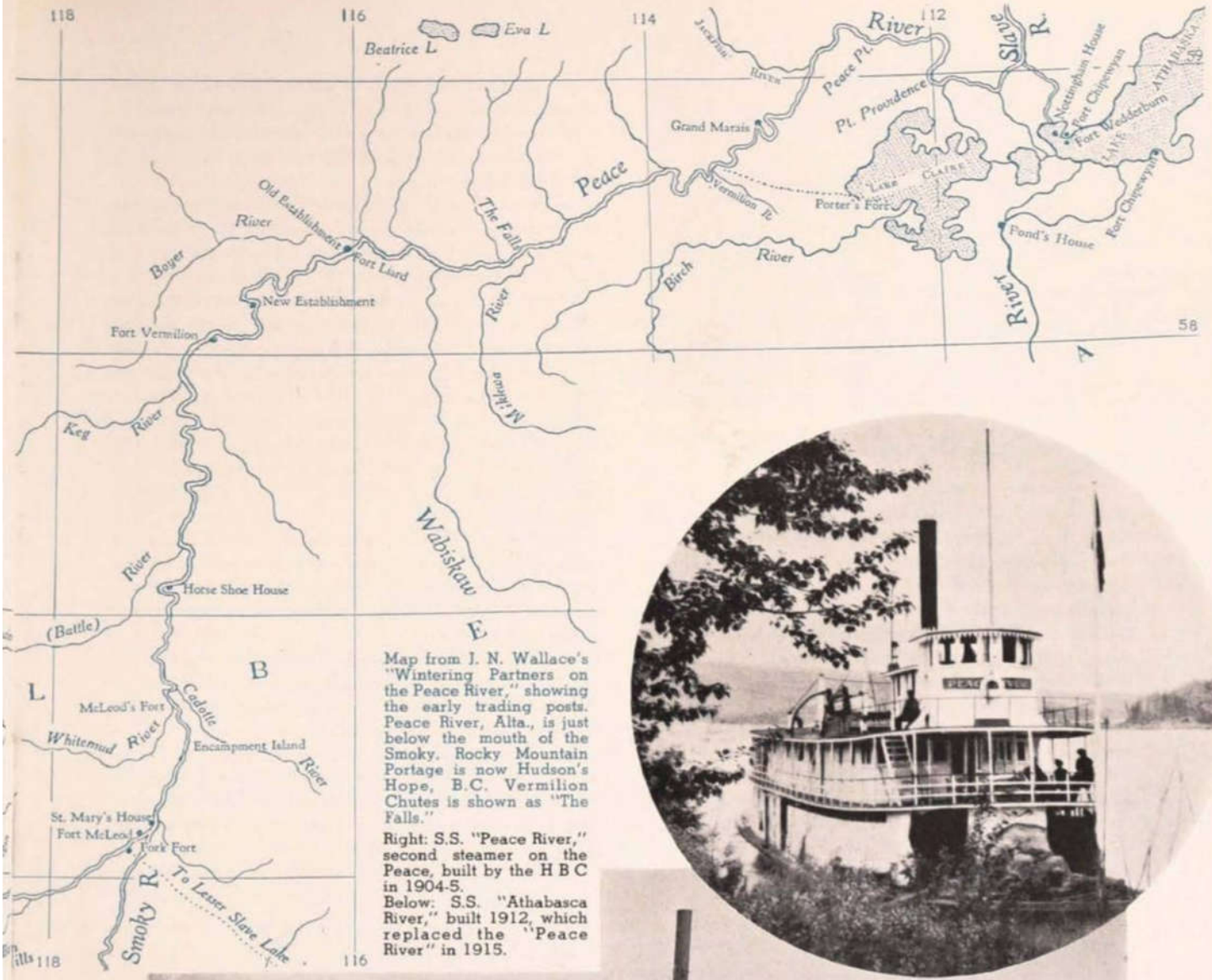
It was in the early summer of 1792 that Sir Alexander Mackenzie dispatched a canoe-load of men from Fort Chipewyan to build a post at the junction of the Peace and the Smoky, to serve as his winter quarters, from which he started on his history-making voyage to the Pacific. In 1805 Simon Fraser built at Rocky Mountain Portage, McLeod established Fort Dunvegan, David Thompson surveyed the Peace from the Old Establishment to its head-waters, and the Hudson's Bay Company built at Fort St. Mary's. Traffic on the river was growing, but most of it was still carried by birch-bark canoes, until the union of the two great Companies in 1821.



Sometime after the union, York Boat brigades began to use the Peace River route, but it was not until 1903 that the first steamboat was seen on the River, the *St. Charles*, a small stern-wheeler, built by the Catholic Missions and operated between Fort Vermilion and Hudson's Hope, under Bishop Grouard's pastorate.

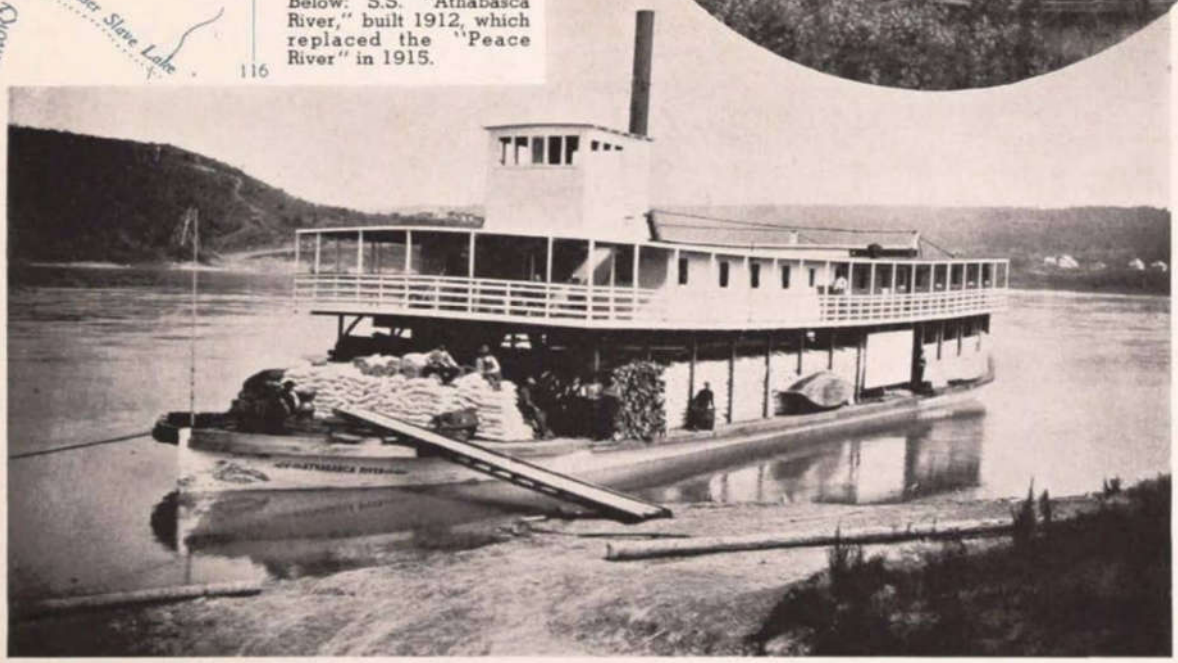
In the winter of 1904 the S.S. *Peace River* was built at Fort Vermilion by the Hudson's Bay Company and ran on the Peace for ten years, under the command of Captain Gullion and Captain Haight. She was the smallest of the Company's boats on the Peace, with a length of 110 feet and a cargo capacity of forty tons and in 1915 she was replaced by a larger boat, the S.S. *Athabasca River*, carrying a hundred tons, built in 1912 at Athabasca Landing, to run between Mirror Landing and the Grand Rapids on the Athabasca River.

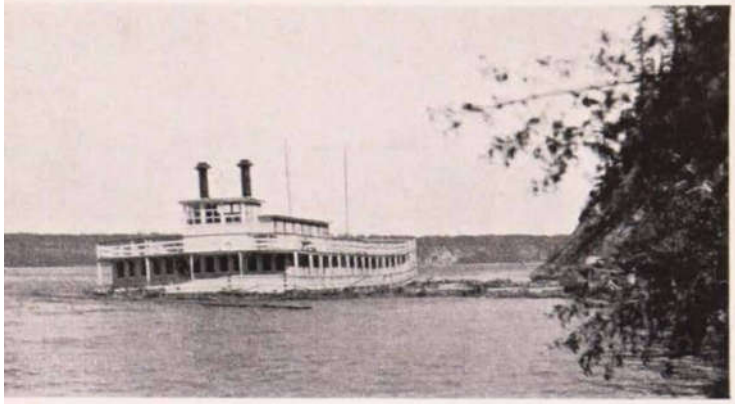
In 1914 she ran the ninety-nine miles of rapids to Fort McMurray and in the winter of 1914-1915, was hauled



Map from J. N. Wallace's "Wintering Partners on the Peace River," showing the early trading posts. Peace River, Alta., is just below the mouth of the Smoky. Rocky Mountain Portage is now Hudson's Hope, B.C. Vermilion Chutes is shown as "The Falls."

Right: S.S. "Peace River," second steamer on the Peace, built by the H B C in 1904-5.
Below: S.S. "Athabasca River," built 1912, which replaced the "Peace River" in 1915.





S. S. "Fort McMurray" as she lay in the Peace River after striking a rock at Vermilion Chutes in 1915.

over the ice at Vermilion Chutes. She was operated on the Peace, between Vermilion and Fort St. John until the winter of 1919. During these years, with the railroad extended to Peace River, the Mackenzie Basin freight was routed over the Peace while another Company boat, the S.S. *Fort McMurray*, was plying below the Chutes.

From 1920 to 1924 the Company's freight was handled by the motor-boat *Weenusk*, built by George Askew at Vancouver and shipped by rail to Peace River. With two barges lashed to her bows, she became a familiar sight, carrying both passengers and freight.

It was in the early spring of 1921 that the people of Peace River saw the first signs of a new era, a change that spelled the end of the river boats on the Peace, when they heard the roar of motors in the sky, as two airplanes circled overhead and landed on the ice at Bear Lake. They were two single-motored Junkers planes, piloted by Lieut. George Gorman and Lieut. Elmer Fullerton, bound for Fort Norman and carrying two Imperial Oil geologists, T. A. Link and W. H. Waddell, and Sergt. Thorne of the Mounted Police.

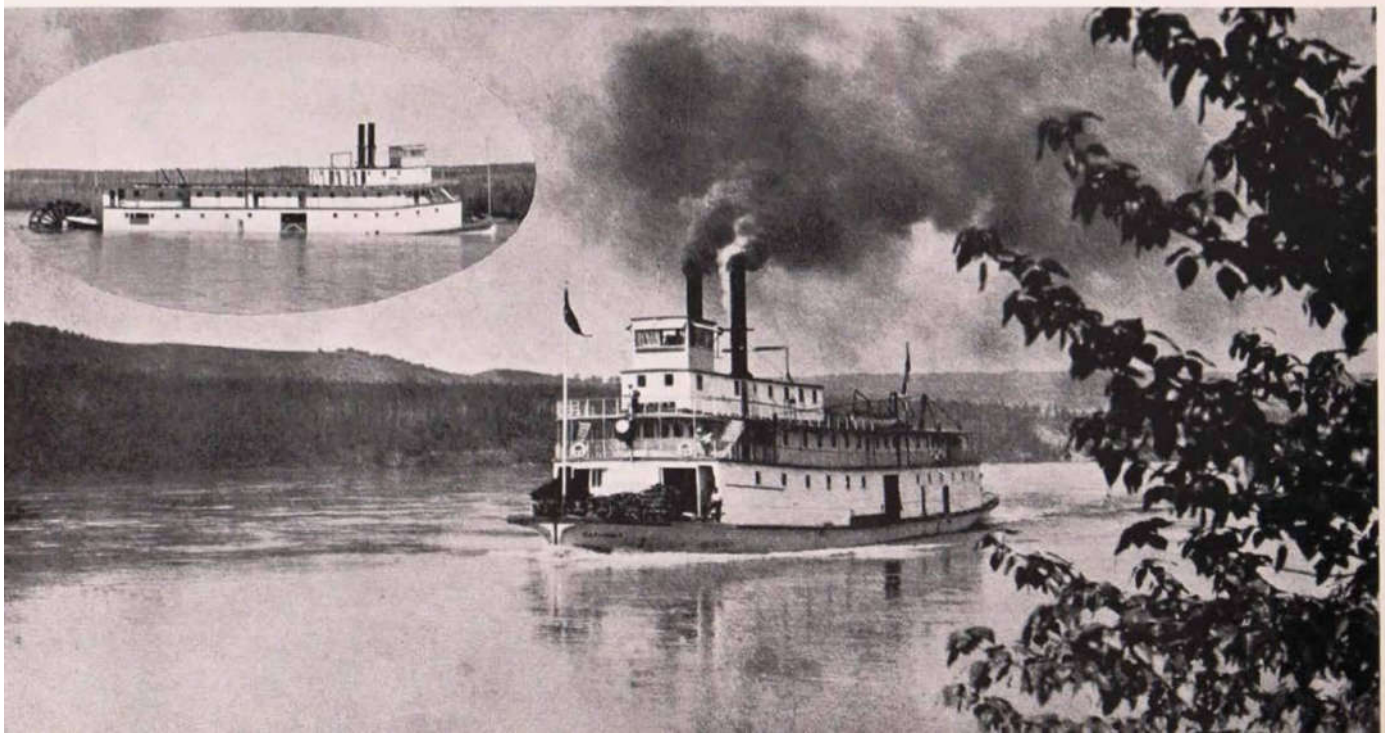
In 1924, with settlement around Fort Vermilion growing, the Company took over and re-launched the S.S. *D. A. Thomas*. Built on the banks of the Peace in the winter of 1915-1916 by George Askew of Vancouver, to the order of Baron Rhondda, the name she carried was that which he bore previous to the conferring of his title. At the time she was built, that famous Welsh capitalist had great plans for the development of the Peace River country and particularly the coal-fields at Hudson's Hope. The first World War put a stop to these plans and, after being operated first by the Peace River Development and later by the Lamson, Hubbard Company, the *Thomas* was laid up in 1922 and stood idle until the Hudson's Bay Company took her over in 1924.

One hundred and sixty-seven feet long, with a beam of forty feet, she was the largest river boat ever to ply the northern rivers, too large, in fact, for the Peace, and her appetite for cord-wood kept a gang of men busy cutting, piling and loading.

In July of 1929 she piled up on a sand-bar near Fort St. John, leaving stranded at Dunvegan a large party of the Edmonton Board of Trade, and lay there until the spring freshet took her out in the spring of 1930.

That same spring it was decided to transfer the *Thomas* to the Athabasca-Slave River route, but in order to do this she had to be sent down the Vermilion Chutes, where no ship of her size had passed before. Capt. Cowley and her pilot, Louis Bourassa, attempted the feat, and the story of their success was told in the December *Beaver* of that year

The "D. A. Thomas," 167 feet long, with a cargo capacity of 200 tons, was the largest steamer ever to operate on the Mackenzie River watershed. Inset: As she appeared after hitting a rock at Vermilion Chutes in 1927.



by the then Fur Trade Commissioner, C. H. French.

"The river there," wrote Mr. French "is perhaps two miles wide, and has a drop of about thirty feet in a distance of one mile. The drop is nothing, provided there is plenty of water, but the rapids above are a mass of large rocks, over which the water foams and boils until it reaches the ledge of rock known as the chutes, when it dives down a steep incline, ending in a large comber.

"It was impossible to buoy out a channel, excepting to mark the best place to enter and the best place to leave the rough water, and in actually making the passage those marks were found most useful. The upper rapids were passed without difficulty, and the chutes proper were found to be just wide enough to allow the ship to pass.

"When the steamer had entered at exactly the right spot and in exactly the right position, she reached the very crest, then grounded. The hull completely filled the chute, holding back the water and immediately raising it sufficiently to allow her to slip over this smooth worn rock far enough for her bow to drop and her stern to rise in such a position that she must go through or be a total wreck. The big combing wave at the foot, weighing many tons, dropped on her bow and the real final test was at hand. Necessary precautions to meet this contingency had been taken. The steamer's bow raised up and at the same time her stern went down, causing her wheel to strike heavily on the chute rock and rip about half of it away. She floated out below all danger spots, and after a close examination it was found the only damage was to the wheel."

After that adventure she made it under her own power down the Mackenzie to Fort Fitzgerald, where she was dismantled. She was the last of the stern-wheelers on the

The "Weenusk" (left) and the "Buffalo Lake" at Peace River town in 1930. K. R. Tremble.

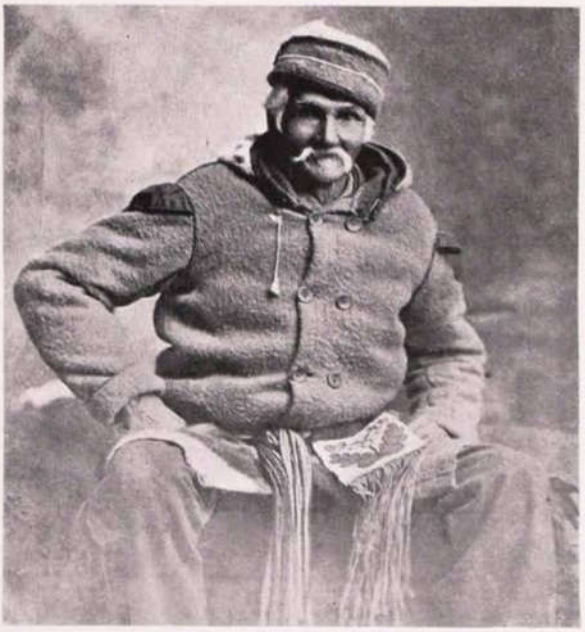
Peace, and to those who had watched her round the bend of the river, with her cabin lights blazing and her whistle blowing, much of the romance of the river travel passed with her.

Perhaps the Indians who, in 1828, saw Sir George Simpson's birch-bark canoe, with its crew of picked Iroquois paddlers, and heard the skirl of Colin Fraser's pipes as he piped the chief ashore, felt the same passing of romance when the canoes gave place to the York boats and steamers. Today, their descendants listen for the drone of the airplane, the clatter of the tractor or the roar of a seven-ton truck.

The *Weenusk* continued to run on the Peace, joined in 1930 by the *Buffalo Lake*, another Askew-built boat, until, in 1940, they were replaced by the motor boat *Weenusk II*, an all-steel tug, the first such vessel to be built in Edmonton, by the Standard Iron Works. Under

"Old Akernum," canoeman, born at Fort Vermilion around 1820, died at Peace River in 1928, after being on the Company's payroll for about 95 years. Courtesy Gladys Reeve.

Alexander Mackenzie, York boat guide, in his blue blanket capote. He is said to have been a direct descendant of his famous namesake, first white man on the upper Peace.



Louis Bourassa, steamboat pilot, like his grandfather and his father, served the Company on the Peace.

Johnny Bourassa, airplane pilot, flew his "Norseman" where his ancestors had travelled by canoe, York boat, and steamer.

Captain Doug Cadenhead she continued to give satisfactory service until 1951, when she was replaced by the *Watson Lake*, the last boat to ply the Peace under the Hudson's Bay Company's flag.

They were a great band of men, the officers of the Company's boats on the Peace, Captains Gullion, Haight, Myers, Cowley and Cadenhead. The last named refuses to leave his beloved river and, last year, still operated the steam ferry at old Fort Dunvegan.

There are none of the old "voyageurs" left alive today, but their names are still remembered on the Peace. Alec Mackenzie, last of the York boat pilots, died at Peace River in 1919. He was a picturesque figure, standing over six foot in his moccasined feet, wearing a blue blanket capote coat and bearing a striking resemblance to his distinguished namesake. He had served the Company most of his seventy-nine years and boasted that he could name every portage from Fort Churchill to the Pacific.

"Old Akernum," an adopted son of the eccentric "Squire Shaw" was born at Fort Vermilion around 1820 and died at Peace River in 1928. His name is said to have been on the Company's pay-roll for ninety-six years, as chore-boy, hunter and canoe man and, finally, as pensioner. He talked familiarly of travelling with Sir George Simpson and other great figures, whose names were only history to his listeners. In the latter part of the nineteenth century he was employed by the Company freighting supplies by raft down the river from the Crossing to Fort Vermilion.

Louis Bourassa, who piloted many of the Hudson's Bay Company's boats on the River, was the third in direct line to serve the Company on the Peace. His grandfather, Vital Bourassa, was apprenticed to the Company at Fort St. Mary's in 1820; his father, John Bourassa, carried the Company's mail from Fort Dunvegan to Fort Chipewyan by dog-team and canoe. Louis' son, Flight-Lieutenant John Bourassa, lost with his plane in the Barrens in May, 1950, wore the "Pathfinder Wings" of the R.A.F., together with the D.F.C. and Bar. He, too, had followed in his forefather's footsteps, carrying the mail from Peace River to Fort Vermilion by horse and sleigh in winter and by boat in summer, until the airplanes took over and John left the River for the Air Force.

These four men typify the history of navigation on the Peace for a hundred and fifty years; "Old Akernum" in his birch-bark canoe, Alec Mackenzie leading the York boats from Churchill to the Pacific, Louis Bourassa in the pilot house of the big stern-wheeler and, finally, Johnny Bourassa, flying a "Norseman" over the routes that his ancestors had travelled by dog-team and canoe.

And so, with a gravelled highway opened from Peace River to Great Slave Lake, with landing-strips throughout the north country and a railroad to Dawson Creek, trucks and planes take over, and the last of the Company's boats has left the mighty Peace. Even now there is talk of a railroad to be built to Great Slave Lake and the Mackenzie. ◆

Gibson's "Twin-plane" aircraft, designed and built by him at Victoria in 1909-10. The engine, mounted in the centre, drove two propellors, fore and aft. On its second try, this machine flew over 200 feet.

FLASH-IN-THE-SKY BOY

by Frank H. Ellis

William Gibson built at Victoria the first Canadian aircraft ever to make a recorded flight in Canada.

IN 1883, Chief Piapot, a leader of the Cree Indians of the Canadian plains, told a small white boy of the Wolseley district in what is now Saskatchewan, that someday he too, would become a great chief. On July 15, 1948, sixty-five years later, the prophecy became a reality when the Indians of the Piapot Reserve, 25 miles northeast of Regina, inducted W. W. Gibson of San Francisco as a chief of the Cree nation in a dramatic ceremony. He became Chief Kisikaw Wawasam, the name being that by which the old chief was known before the white settlers in the early years began to call him Chief Piapot.

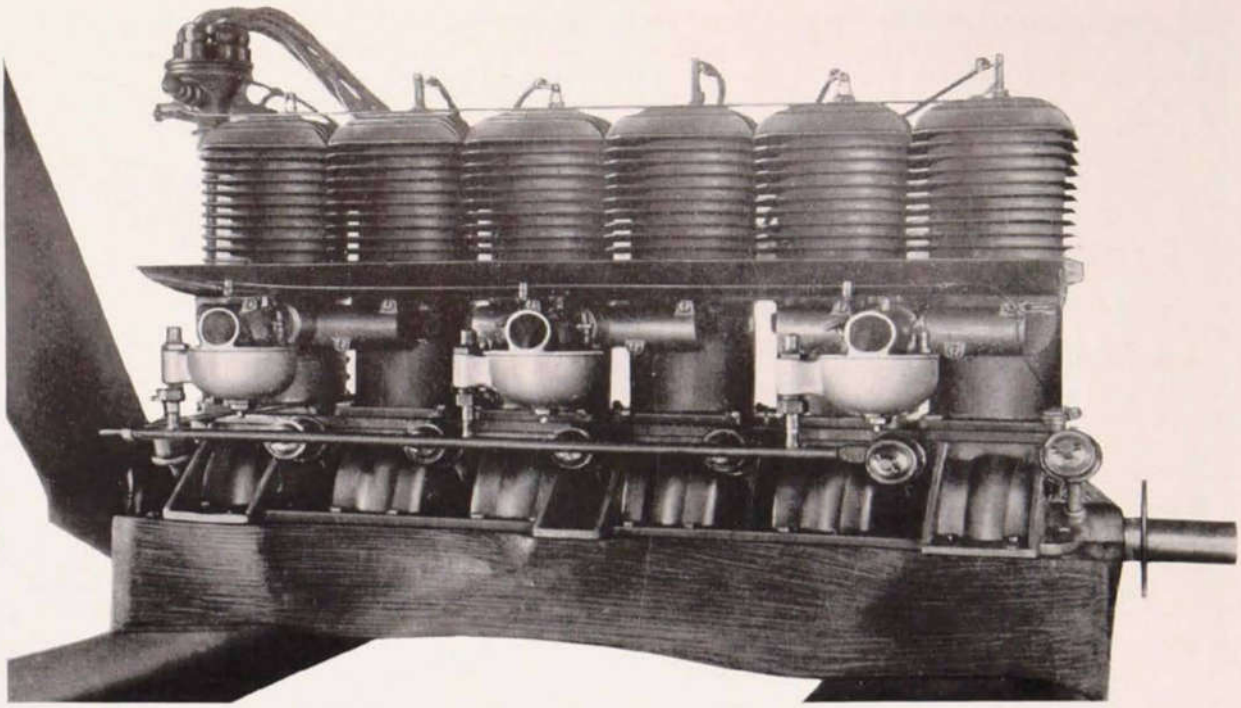
Kisikaw Wawasam, literally translated, means Flash-in-the-sky-boy, and it is an extraordinary coincidence that the chief's Indian name became so well fitted to Gibson, who many years after his friendship with Piapot, became one of Canada's earliest air pioneers.

William Wallace Gibson had been born in Ayrshire, Scotland, and had come to Canada with his parents when they had emigrated to take up land in the West. His interest in flight actually began shortly after the date of Chief Piapot's prophecy. As a boy on his father's farm in the Wolseley district, he was often seen flying a kite, and gradually his interest turned to building model aeroplanes. When he grew up he moved to the village of Balgonie, fifteen miles east of Regina, where he bought a general store; but added responsibilities by no means diminished his interest in flight; and though he soon bought another store at Craven, his success with working models finally determined him to build a full-sized man-carrying aircraft of his own design.

It was then that the railroad boom struck the vicinity. With the prospect of making big money, Gibson took on a contract to build a 20-mile stretch of right-of-way for the Grand Trunk Pacific, then being pushed through, 100 miles north of Balgonie. Later he took on another contract for an additional 22 miles, west to the Touchwood Hills.

Through various causes, Gibson lost $40,000 on the two contracts. He was twenty-seven at the time, and in his own words: "When I had the banks cleaned up, or rather they had cleaned me, I had no stores, nor farm." He decided to take what capital he had and move to Victoria, British Columbia, and start life anew.

He arrived in the B.C. capital in the fall of 1906, and in the spring of 1907 he met a prospector named Locky Grant, owner of a good gold claim on the west coast of Vancouver Island, but who was broke at the time. The outcome was



The first successful aircraft engine to be made in Canada, designed and built by William Gibson. It is now in the National Research Council Museum at Ottawa.

that Gibson bought the claim for $500, and hired Grant to operate it. After a small stamp mill with a water wheel to run it had been installed, the mine on the Elk River paid good dividends, and a gold brick worth $1,200 was brought out to Victoria. Today, Gibson believes it to have been the first of its kind mined from quartz deposit on the west coast of Vancouver Island.

With this proof of the mine's value, Gibson was able to dispose of the claim for $10,000, and with that financial backing he immediately set about planning the construction of a full-sized airplane.

The work began in 1908, and it became heartbreaking business as the inventor gradually formed all the parts himself. Pioneer flying in 1908 was still in its infancy and most inventors tried to keep their interest a secret. Gibson did his best in this respect, but news leaked out, and many residents of Victoria openly ridiculed him. Others, passing him on a downtown street, went through the motion of flying by flapping their arms. The parson of his church came to visit him several times, trying to dissuade him in his project.

Engines were unobtainable at that period, so Gibson set about designing and making his own power plant. With the aid of an engineering firm named Hutchinson Brothers in Victoria, Gibson's six-cylinder, two-cycle, air-cooled engine became a reality, and a most successful motor it turned out to be. Apart from its use in the two aircraft Gibson constructed, its present fame lies in the fact that it was the first successful airplane engine ever to be fabricated in Canada, and today it still exists, on display in the aeronautical section of the National Research Council Museum at Ottawa.

Gibson's first flying machine he named a "Twin-plane," and it had many unique features incorporated in its design. It had two gull-shaped wings, one at the front and one at the rear, the engine being mounted in almost the direct centre of the craft. Different to most motive power plants of that date, it drove two propellers, fore and aft, the forward one being geared to the crankshaft.

At last the day arrived when the craft could be tested, and on September 8, 1910, on the farm lands owned by a Mr. Dean, at Mount Tolmie, near Victoria, the first test flight was made.

After an actual hop through the air, the undergear was damaged in landing, necessitating a delay until the 24th, for repairs to be made. On the latter date, the machine was once again wheeled out onto the grassy meadow, and Gibson took his seat in the craft in another attempt to conquer the air.

Gibson kept the plane in the air for a distance of over 200 feet before setting it down, doing so because it was heading directly for a clump of oak trees. Unfortunately, momentum carried the twin-plane at speed into the standing trees, damaging it quite severely. As winter was near at hand, experiments were abandoned for that year, but the inventor had proved his plane could fly.

It should not be overlooked that at that date, a flight by a machine of new design of even a hundred feet was quite an accomplishment. The initial flight made by Wilbur Wright in the first powered flight recorded at Kitty

Hawk was only 120 feet, and the first recorded flight in Great Britain by A. V. Roe, made in June, 1908, was only 75 feet. Santos Dumont received world acclaim when he made the first flight in Europe, when he covered a distance of less than 200 feet in 1906. Compared with those flights, Gibson did all right at Victoria in 1910.

Later that same year, he obtained a copy of *Artificial and Natural Flight*, written by Sir Hiram Maxim, published in London and New York in 1908 and 1909. It was the first authoritative work on the subject of flight Gibson had ever read, and it greatly influenced him in his future work.

Financial troubles had again come into the picture at this time, so to raise money for further experiments, Gibson sold his home in Victoria, at Simcoe and Clarence Streets, and continued to devote his energies and resources towards the building of a second machine.

He named his second endeavour the "Gibson Multiplane." Patterned after designs advocated by Maxim, it had several tiers of lifting surfaces, at the front and the rear, but unlike any planes of that age, all of the surfaces were constructed completely of spruce wood veneer. The original engine was used, being again placed in a central position between the wings, but this time only one propellor was made use of, as Gibson had found that such an arrangement gave much more efficiency. When the craft was completed at Victoria, early in the spring of 1911, the inventor took the craft to the farm of the then Lieutenant-Governor of British Columbia, the Honorable Thomas Paterson, which was on the mainland at Ladner, B.C.

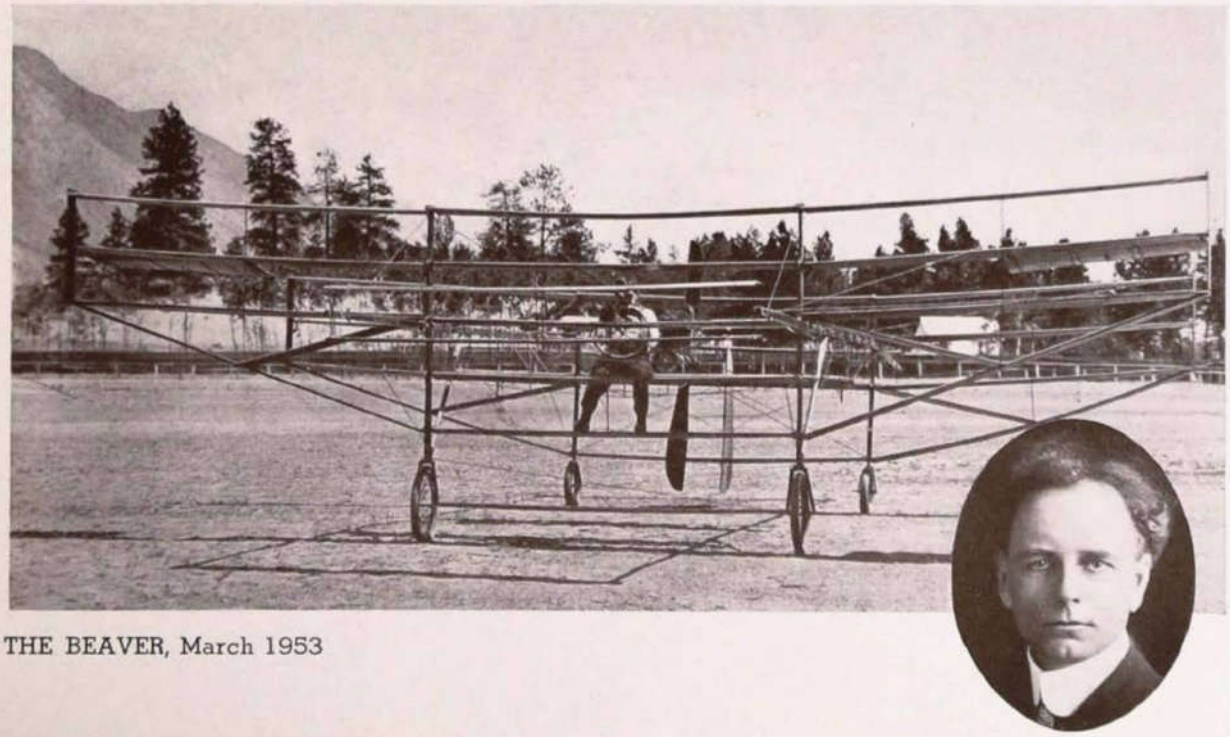
Handicapped by heavy rains, Gibson finally decided to ship the craft to sunnier skies. First he went to Kamloops, B.C., but remained there only a few days before again shipping the multi-plane, this time to a farm near Calgary, where all flight tests were finally conducted. Mrs. Gibson, becoming alarmed for her husband's safety, made him promise not to attempt flights in the machine himself. A fellow helper named Japp took over the task of testing the aircraft and under his guidance a number of splendid hops were made.

The outstanding flight of the machine was its last, when on August 12, 1911, Japp flew the multi-plane about a mile at a height of some 100 feet. A full account of the incident was carried in the *Calgary Herald*, of that date, including a picture of the wrecked machine. The smash-up occurred when Japp was attempting a landing, and had to set the machine down on an area covered with hundreds of badger holes.

This brought to an end Gibson's flight experiments. His money had dwindled to practically nothing, and with a wife and family to clothe and feed, he reluctantly went back to making money instead of just spending it. From the time of his first experiments at Balgonie, to the date of the crack-up at Calgary he had spent $20,000 together with many months of toil. Had he continued with his efforts, he might well have become one of the outstanding aircraft designers of the pioneer years, but as he himself has remarked, "I might just as easily have gone to an early grave."

In his home at Alameda, California, Gibson admits today that he all too frequently thinks of the past, and the long ago prophecy with its aftermath which named him Flash-in-the-sky-boy. Maybe it was just strange circumstance which influenced the Cree nation to name him thus, but whatever the cause, there can be no denying that the title fits him well. ◆

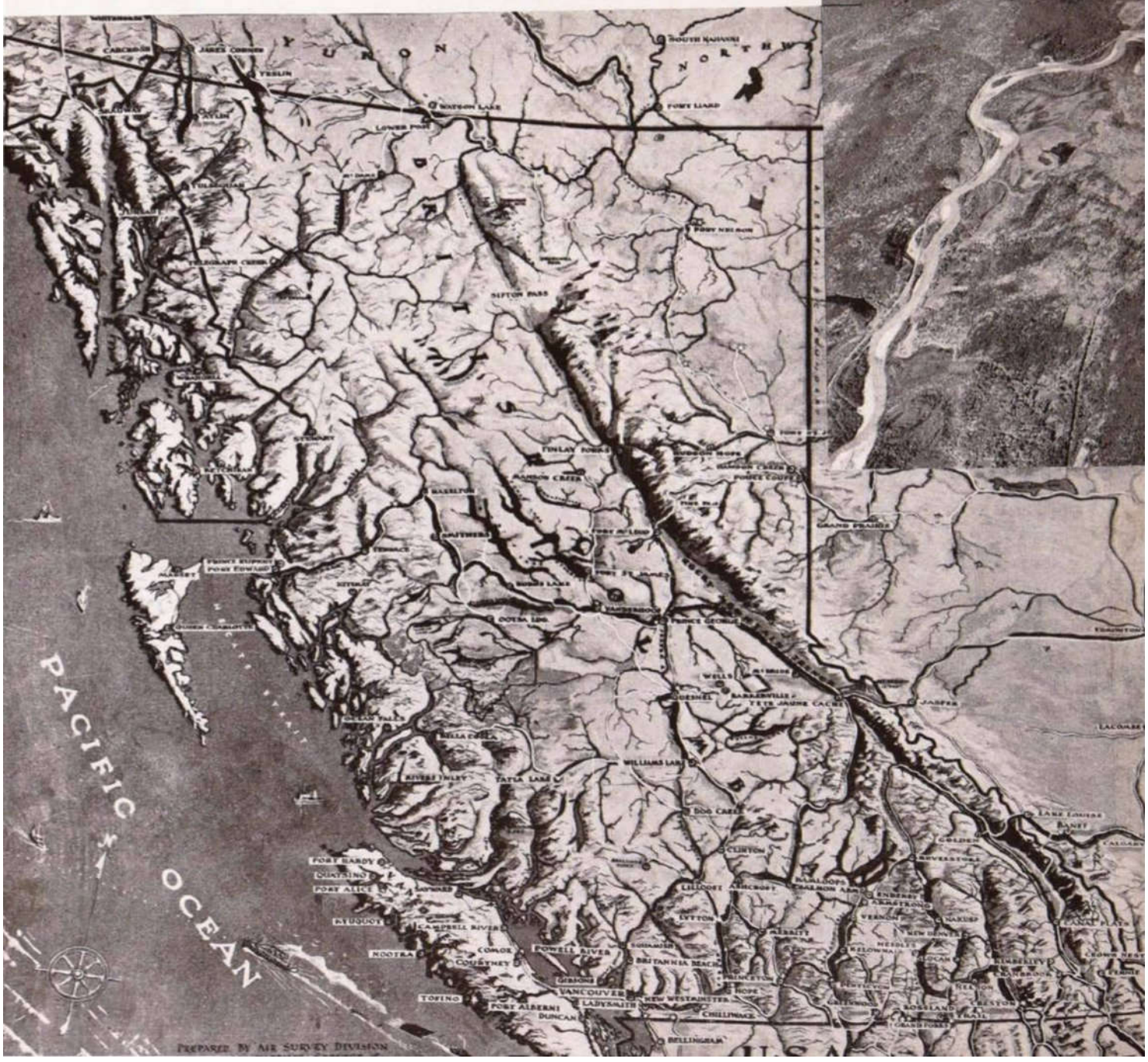
The unique "Multi-plane" which Gibson designed and built at Victoria in 1910-11. All lifting surfaces were of spruce veneer, and could bear the weight of at least twelve men. Inset: W. W. Gibson at the time of his pioneer flights.



THE ROCKY MOUNTAIN TRENCH

A great gash in the Earth's surface, running in an almost straight line for a thousand miles, marks the western boundary of the Rockies.

by J. Lewis Robinson



Lower left: This relief map, prepared by the Provincial Government, shows the Rocky Mountain Trench as the most striking physical feature of B.C.

Upper right: An aerial photograph showing the Fraser winding northwestward from Tete Jaune along the bottom of the Trench, where the word "Trench" appears on the adjoining map. The Rockies are on the right, rising to Mt. Robson (nearly 13,000 feet) out of the picture at bottom right. In the foreground the motor road from Jasper (right) joins the road from Kamloops to continue on up the Trench, while the C.N.R. to Prince Rupert runs along the other side of the Fraser. B.C. Govt.

THE Rocky Mountain Trench is the most continuous gash in the surface of the North American continent, and can rank as one of the world's outstanding topographic features. This persistent valley extends some 1,100 miles from Flathead Lake, Montana, through British Columbia to the Liard River Valley of Yukon Territory. The Trench forms the western boundary of the Canadian Rockies, and its alignment (approximately north 20 degrees west) is parallel to the trend of the Rockies.

The full extent and significance of this amazing valley have been realized only in the past few decades. As a route for the migration of early man who moved southward from Alaska the "highway" of the Trench has intriguing possibilities. Early in World War II parts of it were suggested as a topographically favourable route for the Alaska Highway. It is still frequently discussed as the obvious choice for a railway link between northwestern United States and Alaska.

The name of "trench" is well-suited to this flat-bottomed, steep-sided feature. If Indian mythology had known as much about the geography of the valley as we now know, I am sure that it would have told how this long, straight gash was mathematically laid out and dug by an ancient god. It is unfortunate that there are no ancient Indian legends to explain the origin of the Trench as a whole, because they might be useful to the frustrated geologists who have been unable to arrive at a definite conclusion.

A few scientists, and undoubtedly many travellers, have wondered and postulated on the origin of this "natural highway" which links the United States and Yukon Territory. It might be compared with the Great Valley (Shenandoah) of the Appalachian Mountains which is such an important agricultural region and transport route through the central part of the mountains in eastern United States. But the Trench is longer, narrower, and has steeper sides. As the name indicates, it is a "trench" rather than a "valley."

The floor of the Rocky Mountain Trench lies from 2,000 to 3,000 feet above sea-level. It is therefore far below the mountains which rise to peaks of more than 10,000 feet on both sides of it. Owing to this great difference in altitude the view of the Rocky Mountains from the west side is considered by many to be far superior to that usually seen by visitors approaching from the Alberta side. To the east of the Rockies, altitudes in the Alberta Foothills are already 4,000 to 5,000 feet above sea-level, and the Rockies then rise abruptly another 3,000 to 4,000 feet, with higher peaks beyond. But from the Trench, along Kootenay River in the south, for example, the steep wall of the Rockies rises 5,000 to 7,000 feet directly above the valley in awe-inspiring, rugged grandeur.

Although the floor of the Trench appears quite flat throughout its length when viewed from the air, this is primarily due to the contrast with the high, jagged peaks of the several mountain systems on both sides of it. The Trench varies in width from about 2 to 10 miles, and much of the bottom is rolling to hilly except along the flat terraces cut by rivers. Since the Trench was occupied by remnant ice masses at the end of the Glacial Age, the valley bottom is mantled with hundreds of feet of glacial gravels and sands. Many small, circular lakes mark the final melting places of large ice-blocks. Presumably the Trench was blocked with ice until later than the drier and higher Interior Plateau of B.C. to the westward. This latter area is, therefore, a more probable route for the migrations of early man in North America than the topographically-favourable passage of the Trench.

The exact origin of the Trench is uncertain, and an explanation awaits the accumulation of additional geological evidence. Certainly parts of the remarkably straight valley are caused by faulting (a slippage of rock along zones of weakness, which, over a period of thousands of years may move large masses of rock many hundreds of feet). The process which formed the Trench is associated with the rise of the Rocky Mountains, rather than with the mountain groups which lie to the westward of it. Linear valleys are not peculiar in themselves, for there are many throughout the Cordilleran system of western North America. What *is* distinctive about the Trench is its persistence over such a great extent, and the regularity of its box-like sides, particularly on the east wall.

The Trench was *not* cut by one single river, and one of its present peculiarities is that it is now occupied by several rivers flowing in *opposite* directions. In northwestern Montana, in the flat valley between Kalispell and Eureka, the Stillwater River flows southward to Flathead Lake, and the Tobacco River drains northward to the Kootenay River. The "divide" between the rivers is an unnoticeable, poorly drained flat area.

Northward in the Trench there is a similar situation at Canal Flats, south of Radium Hot Springs. The Kootenay River breaks out of the Rocky Mountains and turns southward, making a deep cut in the floor of the Trench. Only a mile beyond the southern bend of the Kootenay, a small stream trickles *northward* into Columbia Lake to become the headwaters of the mighty Columbia River. It is one of those strange tricks of Nature that separates the two rivers by only a mile of flat-bottomed valley floor, and sends them in opposite directions, only to come together again several hundred miles away to the westward, north of Trail, B.C. The Kootenay River could be diverted very easily into the Columbia at Canal Flats, depriving the United States of an important source of water power at the proposed Libby Dam site! The name "Canal Flats" comes from the fact that a shallow canal was dug across the area early in this century to connect the two streams for navigation. The canal has long been abandoned, however, since no large vessels use the waterways.

Northward again, the Columbia River winds very slowly across the valley floor having a gradient of only 6 inches to the mile. Spring flooding is frequently a problem along the valley bottom, and the road is located on an upper terrace. The Columbia rounds the north end of the Selkirk Mountains, following the gap between the Selkirk and Monashee Ranges. The Trench, however, is occupied by a *southward*-flowing tributary, the Canoe River. This section of the Trench is one of the several little known parts of B.C. There are no roads through the valley, only a few trails, and no settlements. Just south of Tête Jaune, which is west of Mount Robson, there is another of these indiscernible drainage divides. Without a major hill rising above the valley floor, the Canoe flows southward to the Columbia, and the headwaters of the Fraser move northward.

The Fraser River picks up swift-flowing tributaries from the jagged mountains on both sides of it, and finally bends to the westward in the first lowering of the rock walls along the Trench. The "trench" character is less definite in this area. The alignment remains almost the same except for a slight jog to the northeast. The Rockies are not the abrupt 7,000 foot wall that they are to the southward, but rise above the east side of the Trench in a step-like series of linear ranges of increasing altitude. To the westward, the wall is breached by a 170 mile open area which connects with the flat-to-gently-rolling Interior Plateau of B.C. It means that the people of Prince George live in one of the few areas of British Columbia (outside of the Trench) from where the Rocky Mountains can be seen on a clear day!

Northeast of Prince George there is another drainage divide in the Trench, but this one has a little hilly topography. A distance of a few miles in this watershed determines whether waters flow to the Pacific Ocean or to the Arctic Ocean. The headwaters of the Parsnip River flow to the northward to Finlay Forks where they join the southward-flowing Finlay River. These rivers combine to form the Peace, which breaks through the wall of the Rockies to the eastward. The roaring canyon of the Peace River marks the only place where a river has been able to cut down through the continuous barrier of the Canadian Rockies.

To the northward the Trench again has a peculiar drainage divide. The small Fox River, southward-flowing tributary of the Finlay, is but a few miles away from the

northward-moving water of Ketchika River which drains into the Liard River. This divide, Sifton Pass, is the highest point along the Trench, having an altitude of about 3,200 feet. Thus, in four places along the 1,100 mile stretch of the Trench there are drainage divides between major north and south flowing rivers. Engineers must have looked at this and wondered how much—or little—work it would entail to join them all together into one super-river!

Just as the Rocky Mountains terminate at the Liard River, so does the Rocky Mountain Trench end in the broadening valley of the Liard Plain. The alignment of the Trench can be followed to the northwest along the straight valley of the southward-flowing Liard River, but the "trench" character has disappeared.

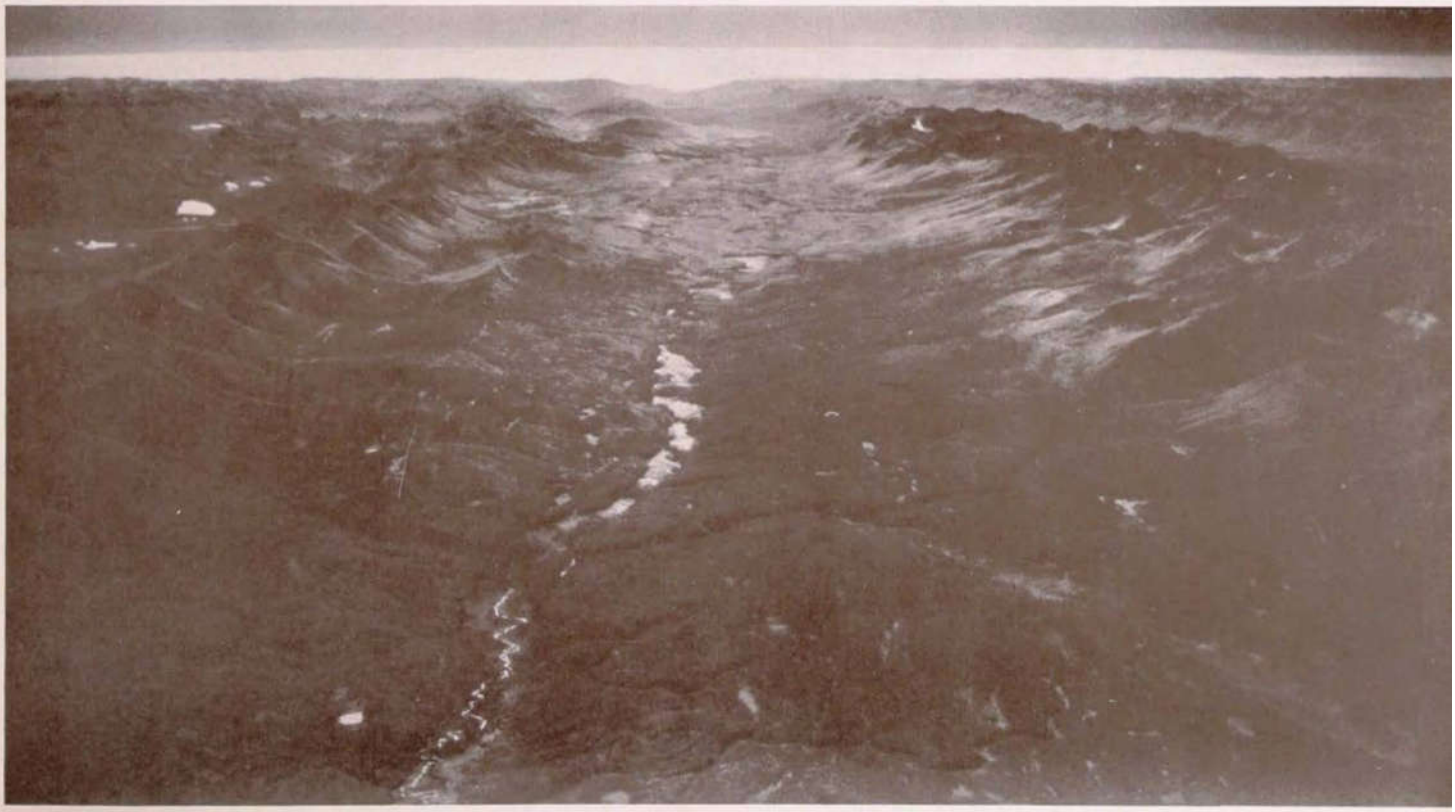
It was once considered that the Tintina Valley of Yukon Territory was a continuation of the Trench, but a study of aerial photos at the end of World War II revealed to the federal government geologist, H. S. Bostock (*Physiography of the Canadian Cordillera*, 1948), that the valleys are definitely separated by the main chain of the Pelly Mountains. The Tintina Valley has many topographic characteristics which are similar to the Trench, and like it, is occupied by several rivers.

To many American planners it has been indeed unfortunate that the Tintina Valley and Rocky Mountain Trench are not continuous. This would have meant a through-route, without a serious topographic barrier, from northwestern United States to Alaska. Undoubtedly it is one of Nature's "through-ways." As a northwest-southeast "avenue" the Trench is mildly appealing to the anthropologist looking for migration routes, but it compels the attention of the military strategist concerned about supply routes through mountainous western North America.

The agriculturist is interested in the Trench because of the small area of level to rolling land which it offers amid the rugged mountains of southeastern B.C. There is a little farming and some ranching in the southern parts of the Trench, despite the rather low rainfall in the valley bottom (15 to 20 inches annual precipitation). To the northward, however, the Trench acts as a funnel for cold air masses from the Yukon, and the frost-free season is generally too short for agricultural development.

Undoubtedly many tourists and travellers would be delighted to see the Trench, since it offers over a thousand miles of unrivalled mountain scenery. As a route to Alaska it would far surpass the scenery of the present Alaska Highway, which, in its access roads in Alberta and also in parts of northeastern B.C., has long stretches of uninteresting country. In addition, the low precipitation would mean less maintenance than routes which have been proposed farther westward, near the Coast Mountains. However, roads are found only in the southern part of the Trench (the Big Bend Highway), and in the sections north of Tete Jaune and north of Prince George, now occupied by the newly opened Hart Highway before it cuts eastward through the Rockies at Pine Pass. Some day motorists may be able to view the magnificence of the Rocky Mountain Trench from end to end; but until resources are discovered along the route to pay for such a road, or the needs of military expediency arise, that day is still far off. ◆

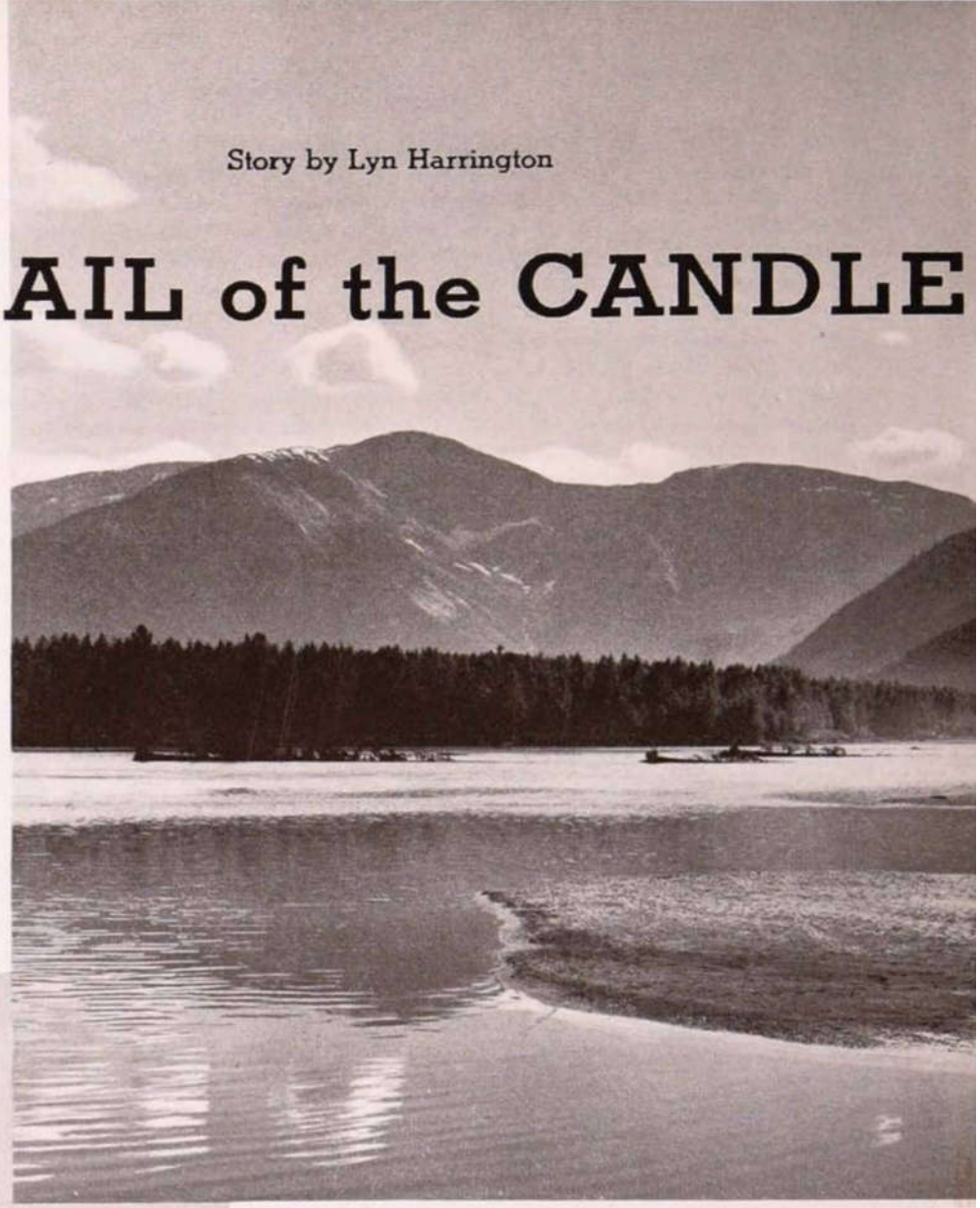
Like a scene from another planet, this aerial view looking down the Trench from above Sifton Pass, its highest point, shows the headwaters of the Fox River in the foreground flowing southeast to join the Finlay, which enters from the valley beyond the dark mountains on the right. B.C. Govt.



On the TRAIL of the CANDLE

Story by Lyn Harrington

The oil of the little fat oolachan was a prized article of trade between the coast Indians and the tribes of the interior, and the "grease trails" they followed ran for hundreds of miles through the mountain valleys.



Right: The Skeena River was noted for its oolachan fishery, and also formed one of the trade routes between the coast and the interior. Below: The Hudson's Bay post at Kitwanga, on the most important of all the grease trails.

OUT to sea and underneath the waves lay the countries of the Fish People. Nearest to shore were the Herring People, then the Oolachan, then the Steelhead Salmon, and so on right to the Cohoe Salmon, in order of their appearance in the coastal rivers. The Cohoes lived farthest from shore, obviously, since they were the last to arrive. So the Bella Coola Indians believed.

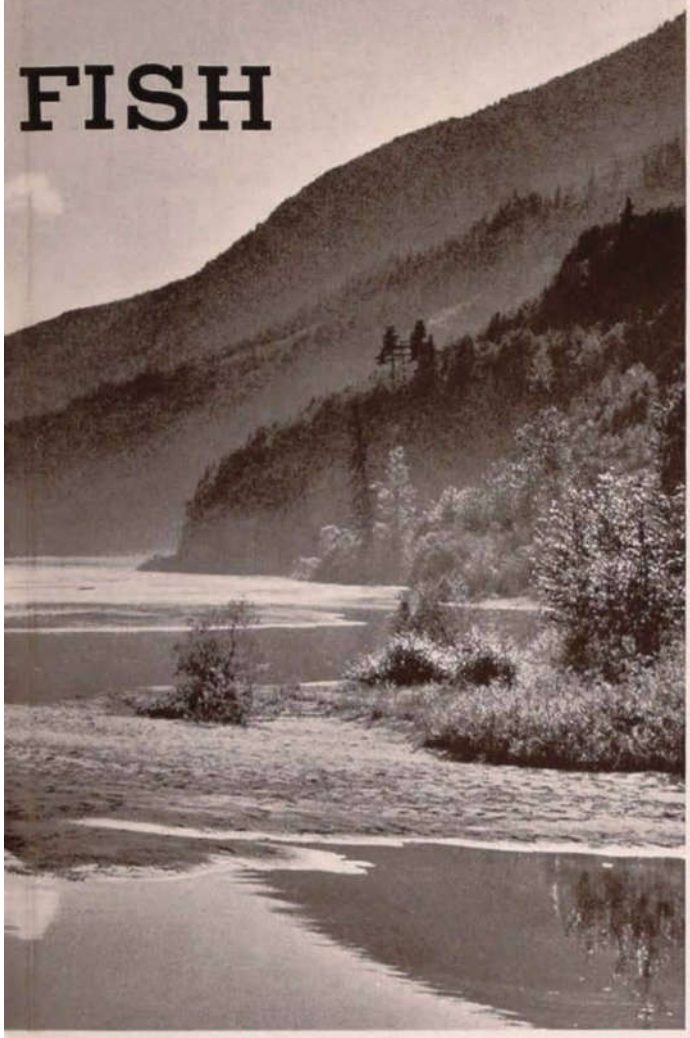
Since the different species arrived in the same order each year, this idea was logical. And besides, a favourite tale of the coastal Indians was of humans who changed shape, and went visiting the lands below the sea.

Each fish had its own importance, and was honoured accordingly. Salmon with its many varieties and long season was the staff of life. But the little fat oolachan ranked second, because of its oil.

Oolikan, olachen, eulachon, uthlecan, hollikan and hoolican—spell it as you wish, the sound is the same.

Photos by Richard Harrington

FISH



Thaleichthys pacificus of the family *Salmonidae*, also called lampfish or candlefish, is closely related to the smelt.

Early spring brings shoals of oolachan into the coastal rivers, after the herring run. The oolachan migration continues over a possible six-weeks period, though the heavy run lasts only a few days. Strangely, these fish are found only on the Pacific coast, from the Columbia River to the Alaska Panhandle.

The natives have an explanation for that, too. For the Supreme Being sent his son to earth bearing gifts for men. Wherever he went, Dudusonx threw a concentrated oolachan into the water, and it became the father of oolachan in that area. But Dudusonx visited only the tribes in that section of coastline.

Where oolachan throng, the favoured fishing spots were valued even above hunting grounds. Many were ancestral rights, and carried an obligation of generosity.

Such sites could be leased. Indians came from long distances to the favourable fishing spots, and bought temporary rights to fish and render the oil. Today these property rights are disregarded. But by law, oolachan fishing in the rivers is reserved for the natives, since the candlefish forms such an important part of their diet. Oolachan are taken commercially by whites, but only in salt water.

For the oolachan is not only a food in itself—boiled, fried, or smoked—but its oil is highly prized. Used like butter, lard or olive oil, for frying or as a sauce for dried berries, smoked meat or hardtack, it is an important food accessory. It was also used medicinally. A cupful (no trifling teaspoonful, mark you) would cure a stomache ache or a cold, by imparting body heat and acting as a laxative. Externally, it eased aching muscles, and rubbed on a mother after childbirth, would make her baby strong.

Its use is lessening today. Younger natives are turning from the malodorous fish oil to butter and shortening for food, and to still more odorous liniments for body-rubs.

Oolachan oil, properly prepared, does not go rancid, but lasts indefinitely, and therein lies its great value. It was used as a preservative for berries and meats and the ground inner bark of the hemlock. Dried fish, oolachan grease, seaweed cakes and berries in grease were prized potlatch gifts.

Evan Davies, postmaster at Kitwanga on the Skeena River, recalls a potlatch there in 1917. The Indian who wanted to be chief (and his liberality got him the job) provided among other things, 1000 boxes of hardtack and 500 tins of oolachan grease. Even at 1917 prices, that augured considerable wealth.

The candlefish, therefore, was important to the potlatches. Oolachan grease might be thrown on the fire, to increase the host's prestige by this conspicuous waste. And the first course of the feast was always salmon dipped in oolachan grease. The second was berries with oolachan grease poured over them. Guests were ranged around the room and received large flat boxes. A chief might be honoured with an individual box, while lesser guests had to share one between four. Anything left over was to be taken home later, or the host would be offended.

Hospitality demanded that nothing less than a canoeful of food be provided. So dugout canoes were set before the guests, full of berries, and the grease poured over them. Or it might be a log five to ten feet in length carved like a bear or whale, but with the interior hollowed out in canoe shape.

Elderberries, cranberries and grease were mashed together into a pulp with rounded stones provided for that purpose. The guests ate with wooden or horn spoons.

In the winter dramas, the company gathered around the centre fire of the communal hall. A whale, roughly carved, was dragged in. "Look out, he's going to vomit!" initiates would shout. Sure enough, as the whale was tipped forward, a gush of oil made the flames leap. Confederates had poured oolachan oil through a hole in the roof, but the onlookers were willingly deceived.

Weir for Eulachon Fishing. Kwakiutl.

This weir has been built around a small dugout canoe.
Amer. Mus. of Nat. Hist.

An Indian with one of the old-time oolachan nets. Another net can be seen on the extreme right, half submerged in the river and weighted down by rocks. Iver Fougner

The grease was the more highly prized, because the runs were not always predictable. The oolachan arrived at different dates in the different rivers, and varied slightly from year to year. Some years there were very few fish. Probably the Oolachan People had been offended during the past season. A rigid code of behaviour must be observed, or the oolachan would remain in the ocean. Refuse must not be thrown into the river. Women must keep well out of sight during the run. Spilling grease offends the oolachan as careless waste. "When the oolachan run begins," wrote a Rev. Mr. Holcombe, missionary on the Skeena around 1860, "the Indian custom is to meet the fish as they come and speak to them: 'You fish, you fish! You are, you are all chiefs!' "

The formality attended, fishing begins. At times the oolachan have been so dense they could be scooped up in a bucket. A rake (a pole set with sharpened bits of bone or spikes) was swept through the school of fish, and never failed to catch some. The dip-net was more effective. The most productive method, however, was to stake out purse-like nets at a fairly shallow spot, a laborious task. The net faced upstream. Its mouth would be roughly oval, perhaps 8 to 10 feet wide, and tapering in its 30-foot length.

The nets, now of cotton, were once made from nettle-fibre twine. The women made the twine and twisted a five-ply cord. The men constructed the nets. A new net would be dipped in a solution of boiled hemlock to darken it. Then the net was boiled in a solution of willow bark, so that the knots would not slip. These nets took up to 2000 pounds of fish at once. Today's commercial fishermen use small-meshed gill nets.

The nets were emptied first thing in the morning. Some fish were threaded through the gills on slender sticks, or strung horizontally between parallel cedar cords. They might be dried in the sunlight, over an open fire, or today, over a stove. In the communal houses, they were smoked over the central fire, carefully watched lest they burn, then hung in the top of the house to continue drying. Dried in this manner, they might keep for years. A handful were sufficient to keep a hunter on the trail for several days.

Though valued as food, the grease was more important. Rendering was done in a primitive style.

The fish were dumped into wooden boxes, or storage pits lined with evergreen boughs. They were allowed to rot for 10 to 14 days, so the oil would separate more easily. If left longer, the oil might leach away or evaporate. Certainly the "bouquet" of putrefying fish filled the air for miles around.

Men, women, children and dogs gathered on the river bank to help in the rendering process. Water and wood and stones must be fetched, the fire tended, the brew stirred, more receptacles brought, the refuse thrown out.

The decayed fish were moved into wooden boxes, or even an old leaky dugout canoe would do. Water was added, hot stones, then planks laid on top to keep the fish down and permit the grease to rise. This was skimmed off, only relatively clear.

The refuse might be thrown to the dogs, or be pressed into fish cakes. Or it might get a second processing, wrapped in porous matting. A squaw, standing on a low platform, would knead the bundle against her naked breast, and the oil would be caught in a box below. It was taboo to scrape off the accumulation of grease until all rendering ended. Nowadays, the oil is rendered in home-made furnaces of sheet-metal, under which fires can be maintained, and presses with levers are provided for extracting the oil.

The grease was put up in a variety of receptacles, mostly in tin cans today. "Ready-made bottles are formed by the great sea-wrack that grows to immense size in these

northern seas," recorded Mr. Holcombe. "It has a hollow stalk expanded into a complete flask at the root end. These are kept wet until needed. As the oil is obtained, it is stored away, there being one quart or three pints in each."

Picturesque but inaccurate, since the flask is not the root but the upper end. Nor is the idea practicable, for with all their apparent size, the kelp bulbs have little space within.

Bladders or stomachs of goat, seal or deer sometimes served for household storage. For trade purposes, the oolachan grease was packed into watertight boxes. "Boxes were three middle finger spans high (measured from the tip of the outspread thumb to the tip of the third finger) and two fist finger spans wide," wrote Dr. Viola Garfield of the University of Washington. "Exchange value of a large box of olachen grease equalled one caribou skin: or 40 groundhog skins: or 1 white Hudson's Bay Company blanket: or $1.50 cash, a century ago."

"Olachen grease," she continues, "always brought a higher price from the Haidas of the Queen Charlotte Islands than from the Tsimshian tribes, because the former could get it only by trade. The fine canoes of the Haidas were in demand amongst the Tsimshians."

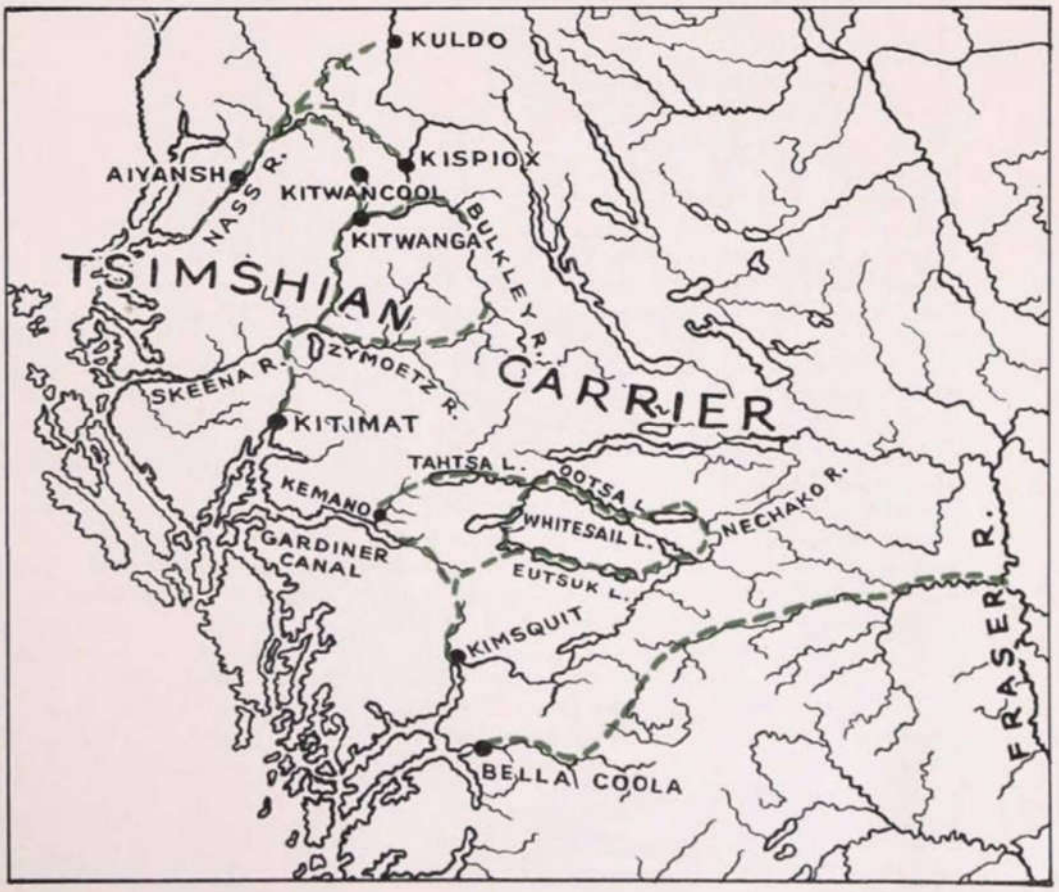
From the good fishing grounds at the river mouths, trails led inland by land and water. Coastal Indians would not travel on land, if they could avoid it. And the river valleys were so densely forested that the trails were high in the mountains, just under the snowline. Nothing but a product of great value could lure interior tribes over these high and hazardous trails. But oolachan grease was one thing that lured the interior tribes, and the regular trade routes came to be known as "grease trails."

"The most famous grease trail led inland from the Nass River," says Wilson Duff, anthropologist at the Provincial Museum, Victoria, B.C. "This trail went up the Nass from the village of Gitlakdamiks (now Aiyansh), thence up the Cranberry River and over the low divide to Kitwancool and Kitwanga. This most important of all grease trails had branches to Kuldo and Kispiox.

"Eulachon oil from fisheries farther south also got to interior Athapaskan tribes over grease trails. One trail described by Diamond Jenness connected Kitimat with the Skeena, then forked. One fork proceeded on up the Skeena to the Bulkley River Carriers. The other went up the Zymoetz (or the Copper) and across to the Bulkley.

"The Cheslatta Carriers of the Tweedsmuir Park area came to the coast by two routes, for eulachon oil among other things. One returned from Kemano, went over the Coast Range, then by canoe through Tahtsa and Ootsa Lakes. The other started at Kimsquit, crossed the divide to Eutsuk Lake, then forked. From here one could go north through Whitesail and Ootsa Lakes, or south through Eutsuk and its connecting lakes to the Nechako. A branch of this trail led to the head of Gardiner Canal.

"Still other Carrier subtribes came down to the coast at Bella Coola, over the famous trail along which Alexander Mackenzie travelled in 1793. Nazko and Algatcho Carriers and sometimes Chilcotins used this trail, coming



The principal grease trails over which the oolachan oil was carried to the interior are shown on this map. That up the Nass River was the most important. The longest was the most southerly, by the route that Mackenzie took to reach the sea.

down to the coast to find food in bad winters, or bringing furs and skins to trade for eulachon oil, or other products of the sea."

With the coming of the railways and highways, the old trade routes have naturally fallen into disuse. At Hazelton they still speak familiarly of the grease trail from the Nass. Unfortunately, the footpath is so overgrown that it would take an expert to locate it, and very strenuous efforts to follow it on foot, because little-used bridges have been swept away.

Many of the old methods have passed, too. This past year only two nets were staked in the Nass River. But fishing boats are now taking the little fish in fine seines, in rivers from the Fraser north. Much of this haul is quick-frozen, for market and restaurant trade. The white man is learning what the Indians long knew, that the little candlefish is delicious, although the Bella Coola Indians thought them rather tasteless when fresh.

Before the coming of the railway to Prince Rupert, oolachan was considered a delicacy, "the Skeena turkey." 15 or 20 made a hearty meal. But on a dare, Robert Cunningham, a former free-trader at Hazelton and a colourful character of the past, downed 81 at a single sitting.

Fresh and smoked oolachans are still found on the market. Bacon Fisheries is the one Prince Rupert packer to bother with them. Jimmie Bacon deals in oolachan grease, fresh-frozen and smoked oolachan and in other exotic commodities such as dried herring eggs on seaweed.

"We thread the hoolicans on iron rods, and hang them in tiers in the smokehouse," Mr. Bacon explained. "I tried thermostatic control with coal smoke, and that smoke salt, but I've gone back to the slower process of using hardwood sawdust. You get better colour and much better flavour that way. Oolachans go well with beer."

Jimmie Bacon also buys oolachan oil from the Indians. The oil looks remarkably like grapefruit juice, yellow and a little murky. The pungent reek is lessened in processing, though it is still too much for white palates. It costs $6.00 to $10.50 per gallon tin, depending on quality.

Certainly the oolachan is greasy enough. Mr. Holcombe said, "It is next to impossible to boil or fry these fish" (he was wrong) "for they melt completely into oil. Dried fish are used as candles by the Indians, with a wick of innerbark of cedar or rush pith drawn through them with a big wooden needle. When lighted, the candlefish burns steadily until consumed. One can read by it easily."

Sounds romantic, but today's experts figure it was simply an experiment on the missionary's part. Our efforts to burn the candle at either end merely proved why there is no history of them having been used in this way. ◆

Dried and smoked oolachans can be bought at the meatmarkets of British Columbia, and make very good eating (especially with beer). But the candlefish does not make a very good candle, though it is fat enough to burn in its own grease.

British Columbia

British Columbia is very much in the limelight these days, chiefly owing to the enormous developments that are taking place there. But even without such developments, this most westerly of Canada's ten provinces would still give cause for amazement. No one who has crossed it from Alberta to the sea can fail to be impressed with its magnificence and its infinite variety.

This special B.C. issue of the *Beaver* cannot, of course, be representative of that province. It would take several issues of a fifty-page magazine such as this to deal with so large a subject comprehensively. The province's three chief glories—the seacoasts, the mountains, and the forests—are hardly mentioned here, because they are already so well known. One might say the same about the Kitimat-Kemano project; but that is a continuing enterprise, and there are always new developments to be recorded.

In this issue, then, we have dealt mostly with some of the lesser known—but still interesting—features of B.C., past and present, which may serve as a reminder that there is more to the province than seaports and totem poles, mountains and orchards, fiords and forests.

Cannington Manor

Mrs. Hewlett's article on Cannington Manor in the December *Beaver* has given rise to a great many favorable comments from readers, especially from those who knew Cannington in the days of its youth. One comment comes from Mrs. Ann Hanley of White Rock, B.C., who writes that the Indian poetess, Pauline Johnson, once gave a concert there. She was touring the prairie towns with Walter McRaye, and was engaged to give a concert at the Becktons' as a grand finale to a field day.

"Leaving the train at Moosomin," says Mrs. Hanley, "the two artists were met by a courier, who escorted them to the four-horse 'brake.' There were the footmen in red coats, a driver also in red, and another red-coated retainer who sat beside the driver to wind the horn. They were off! Across the prairie they went with the outriders, and merry shouts of 'Tally Ho!' "

At the concert, Pauline Johnson in native costume, recited her own poems, while Mr. McRaye, whose repertoire consisted of stories, poems, and imitations, showed himself to be a talented comedian. It was an evening to be remembered.

Author! Author!

J. A. Burgesse of the Saguenay Power Co. at Ile Maligne, P.Q., is a frequent contributor to the *Beaver* and an authority on the Indians of northern Quebec . . . *E. P. Creech* is chief draughtsman of the Air Surveys Division of the British Columbia Department of Lands . . . *Frank H. Ellis* has contributed several articles to these pages, dealing with pioneer flying in Canada . . . *Richard and Lyn Harrington*, husband and wife, often work as a team on a story about some part of Canada they have visited in the course of their far-flung travels . . . *Roy I. Jackson* is assistant director of the International Pacific Salmon Fisheries Commission with headquarters at New Westminster, B.C. . . . *Francis Lee Jaques* is a celebrated American outdoor artist, whose brilliant scratchboard drawings have appeared more than once in the *Beaver* . . . *H. Douglas Kemp* is a Winnipeg school teacher whose M.A. thesis covered the period of western settlement with which Mr. Howard's book deals . . . *Thomas W. Kent* is associate editor of the London *Economist*. He visited the North and West last year and saw the Kemano-Kitimat project in operation . . . *Morden H. Long* is professor of history at the University of Alberta . . . *Jean Murray*, Ph.D., is a professor of history at the University of Saskatchewan . . . *Richard L. Neuberger*, widely-read contributor to leading U.S. periodicals, is a state senator of Oregon . . . *J. Lewis Robinson*, Ph.D., is professor of geography at the University of British Columbia . . . *Norman Soars* used to be librarian of the public library at Peace River, Alberta.

History on Display

What a tremendous difference there is between the museum of yesterday and the museum of today! The modern museum is bright, airy, attractive and well lighted, with striking displays arranged so as to tell an interesting and understandable story. Yet the word "museum" still carries with it the stigma of the old-style institution where dusty objects, illegibly labelled, were haphazardly crowded together in dimly lit cases.

That kind of museum was the enlarged and ungainly offspring of the old time curio cabinet which used to adorn the drawing rooms of our ancestors. Often the owner of such curios would bequeath them to the local museum, with the proviso that they should always be displayed intact as "The Homer J. Witherspoon Collection" (or whatever the donor's name was). And the local museum, not wishing to offend anyone, would accept the collection plus the proviso. (Which incidentally reminds us of a telling remark by John Cotton Dana, the great American museist: "The necklace found on an Egyptian mummy is unique, old and costly. But even if presented to a museum by someone of wealth and influence, it may still be hideous.")

Fortunately museums of today have learned what dangers lie in such a course, and they politely decline such wholesale offerings, preferring to choose only what they want, to *illustrate* the points they wish to make. For museum display now is largely a matter of illustrating a story—not with pictures (each of which is said to be worth a thousand words) but with the original objects themselves (which are even more valuable).

Treated thus, the history museum becomes a means of visual education for adults as well as children. The story begins in the proper place—at the beginning—and follows through continuously to the end. And in reading this story, the visitor does the next best thing to meeting the people, great and small, who made history: he sees before him the objects they made and used, the letters and documents they signed. "Do you want to see what Montcalm really wrote?" asks T. Morris Longstreth, in telling of the treasures of the Canadian public archives. "Then look over his shoulder while he writes it." That is the human touch which museums can lend to the teaching of history.

But the modern history museum goes beyond that. Using the arts of display and lighting, it appeals to the eye as well as the mind, by means of attractive exhibits, well lit, uncrowded, and labelled with imagination as well as accuracy. The result is that history museums are chalking up new attendance records as people come to know them better. Last year, for instance, in the H B C museum at Winnipeg, where the current theme is "Manitoba, Historic Gateway to the West and North," more people than ever (64,817) signed the register; and it was noted that numbers of children who had come by themselves were returning for a second look with their parents in tow.

That's a healthy sign. Maybe the word "museum" is gradually losing its old meaning, and more adults are coming to realize that the modern museum, if properly directed, can become one of the most potent forces in adult education.

BOOKS OF THE NORTH

CUMBERLAND HOUSE JOURNALS AND INLAND JOURNALS, 1775-82. Second Series, 1779-82. Edited by E. E. Rich, assisted by A. M. Johnson. With an introduction by Richard Glover. London: The Hudson's Bay Record Society, 1952. 313 pages.

Reviewed by Jean E. Murray

CUMBERLAND House was the first of the inland posts established by the Hudson's Bay Company and was built to meet the challenge of Canadian competition for furs from the rich Saskatchewan country. The Company was seriously concerned about the shrinkage in trade which followed the appearance of British traders from Montreal in the region northwest of Lake Winnipeg in the early 1770s. The "Canada Pedlars," as the Hudson's Bay Company servants called them, were well supplied with trading goods, including large quantities of New England rum, and succeeded in getting the best of the furs from Saskatchewan which otherwise would have gone to York Fort. In order to win back this trade the Hudson's Bay Company had to abandon the time-honoured policy of persuading the Indians to carry their furs to the forts on the Bay and decide to establish settlements far inland where furs could be collected in the Canadian manner.

In 1774 Samuel Hearne was sent to the Saskatchewan to open a post near Pasquia. He chose a site on the south shore of Pine Island Lake (about sixty miles above The Pas) and started construction of the fort later known as Cumberland House. Hearne soon found, however, that the new post was practically surrounded by Pedlars. The Frobishers were at Beaver Lake to the north; Paterson, Holmes, and Pangman were near the forks of the Saskatchewan to the west and also had men downstream at The Pas; other traders were intercepting Indians from Lake Winnipegosis and the Red Deer river to the south. Hearne therefore urged the Company to multiply the inland posts and put the Pedlars to rout by underselling them. He realized that it would take time to acquire all the canoes and canoemen necessary to keep the new settlements supplied with goods but he was convinced that the Company could squeeze out its competitors in a price war.

Hearne also noted that the Canadian posts close to the buffalo country had less trouble getting provisions in trade than Cumberland House which was in the forest belt. So he advised the Company to place the next settlement higher up the Saskatchewan near the Pedlars.

Trading parties went up river from Cumberland House frequently in the years 1775-78. No attempt was made to open an outpost, though, until September, 1778, when Robert Longmoor agreed to go above the Canadians at Eagle Hills on the North Branch to establish Hudson House. Longmoor was unable to go beyond a settlement of Canadians near Silver Grove (about three miles below Wingard Ferry) and had to spend an uncomfortable winter there. His men were outnumbered by the Pedlars ten to one and also were outmanoeuvered by them in trade. In April word came down river that the Crees had attacked the Canadians at Eagle Hills. The Pedlars hastily departed from Silver Grove and Longmoor reluctantly decided to go back to Cumberland House.

In July Longmoor returned to the North Saskatchewan with William Tomison, the energetic Master of Cumberland House, to build another Hudson House. A very satisfactory site was found fourteen miles below Silver Grove and about thirty miles above the Sturgeon River fort to which the Canadians had retired temporarily. The new post was close to the Wood Cree track from the Thickwood Hills and could intercept Indians coming from the fur fields to the west. Across the river was Lily Plain, a winter resort of the buffalo and a favorite hunting ground of the plains tribes to the south. Hudson House therefore attracted visits from the Cree of the north and the Pigogomew, Assiniboin, and other horsemen from the prairies who were new to the Hudson's Bay Company. It played a useful role in the inland trade until 1786 when South Branch House was built near Gardepuy's Crossing on the South Saskatchewan, and Manchester House was established far up the North Branch on Pine Island (north of the present village of Paynton). In 1787 Hudson House was abandoned in favour of South Branch House as a wintering place and was burned to the ground by Canadians in the autumn of 1791.

The Cumberland House journals kept by Hearne in 1774-75, extracts from Matthew Cocking's journals for 1775-77, and the journals of Philip Turnor, a Company surveyor who visited the inland posts in 1778-79, were edited by Dr. J. B. Tyrrell and published by the Champlain Society in 1934. The Hudson's Bay Record Society printed the full text of Cocking's journals and continued the series to June, 1779, in a volume issued to its members in 1951. Recently this Society published a second series of Cumberland and Hudson House journals covering the years 1779-82 and edited, as in the case of the first volume, by Mr. E. E. Rich, assisted by the Archivist for the Hudson's Bay Company, Miss A. M. Johnson. An admirable introduction to each volume has been provided by Professor Glover of the University of Manitoba.

The journals for both the Saskatchewan posts were kept by the Master of Cumberland House, when in residence at either place, and continued by the person left in charge during his absence. During the years 1779-82 William Tomison was chiefly responsible for them and was assisted by William Walker and George Hudson at Cumberland House and Robert Longmoor, James Elphinstone, and William Walker at Hudson House. The principal events and transactions at the post were recorded in the journals, while the details of trade were entered in the account and allowance books. Most of the journal entries relate to the daily routine. They include weather reports, brief mention of work in which the men were employed, laconic statements about the arrival and departure of the Indians and other visitors, and general comments about trade. The ordinary round of duties at Cumberland House included fishing, making and mending nets, cutting and piling firewood, packing furs for shipment to York Fort, and gardening whenever possible. At Hudson House there was no fishing but the men were kept busy collecting firewood. There were frequent excursions into the woodland or over the prairie in search of game and of Indians willing to supply the posts with meat. Special efforts were made to entice the Cree to build canoes for the Company. Robert Longmoor was particularly successful in this and also in learning how to do it himself. He made two of the ten new canoes which he carefully escorted to Cumberland House in the spring of 1780, the first of a series that he built.

The journals describe the comings and goings of the Pedlars, so far as they were known to the Company's servants. Every bit of information that could be gleaned about Canadian prices and returns in trade was written up. At Cumberland House the "Master Traders" were received usually "with great civility." Peter Pond was given meat and other supplies when he arrived in July, 1779, "very much distressed for want of food." Patrick Small, on the other hand, was put out of countenance when Tomison seized his furs in May, 1780, and held them until he got satisfaction "For beaver coats that has been carried off by Holmes and Pangman with [the Company's] Mark on them." Up-country at Hudson House there was more tension. Robert Longmoor, for example, could not forget the rough treatment that he and his men had received at Silver Grove in the winter of 1778-79. Both he and his immediate superior, William Tomison, heartily disliked the arrogant Irishman, William Holmes. After seeing Holmes go past Hudson House in a horse-drawn sled, while his "retinue" travelled on foot, Tomison wrote on January 26, 1780: "He did not speak here neither did I give him any invitation as he is a proud saucy fellow." Less than a month later Tomison received a message from Holmes threatening vengeance on the Company's servants if the Indians should dare to attack the Canadians. The Master of Cumberland House replied "bravely tho' uncoothly" that Holmes "need not think to frighten Us with his Daring Language for Scotchmen can kill as well as Irishmen can."

Tomison and his associates complained bitterly about the way in which the Pedlars "corrupted" the natives. "The Canadians," according to Longmoor, "does not

think anything of sending an Eight Gallon Keg of Rum to a Couple of Men, only for to get them to come in." The Hudson's Bay Company men did not approve of such reckless use of rum. They used brandy in moderate quantities in their trade at the forts on the Bay but reserved it for ceremonial occasions and for special rewards. They did not like to lose trade to their rivals, though, and appealed to the Company to increase the stocks of brandy and other trading goods allotted to the inland posts. Longmoor was certain that at Hudson House in 1780 the Company lost to the Canadians no less than sixteen thousand made-beaver "only for want of men and Goods."

The Indians became "very troublesome and saucy" when drunk. On March 4, 1781, they almost got out of hand at Hudson House. Longmoor's entry in the journal tells the story briefly:

> A.M. the Indians arrived, P.M. the men all attending the Indians all drunk, At 8 P.M. they wanted to force the Gates and come in to take what they pleased, they had ten Guns loaded, Some with Ball, Some with Slugs and some Bristol Shot, they cut the Gates and likewise some of the Stockades the first Gun presented I broke, and then took all the rest from them, and their Knives and Bayonets, and four I confined in the House, which was the Ringleaders, for some time, And then as I had all their Arms I let them out.

The next day Longmoor wrote: "All quiet, the Indians trading." The following morning he observed: "The Indians went all off quietly and no bad words."

The ravages of the smallpox epidemic of 1781-82 are grimly portrayed in the journals. The disease reached tribes on the North Saskatchewan hard on the heels of a famine which the Indians themselves had caused by setting fire to the prairie in 1780. On October 22, 1781, an Indian very ill with smallpox appeared at Hudson House, the first of a succession of victims to reach the post. Little could be done for them beyond sharing food and firewood with the sick and burying the dead. A hunting party from Hudson House actually saw the desolation caused by the disease in an Indian camp near the Eagle Hills. Mitchell Oman's account of the harrowing experience is in David Thompson's *Narrative* for 1784-1812. The Master of Hudson House, William Walker, wrote to Tomison on December 4 that his men had seen "the Indians lying dead about the Barren Ground like Rotten Sheep, their Tents left standing and the Wild Beasts devouring them." Before Walker's letter with "the Disagreeable News" could reach Tomison the smallpox victims began to arrive at Cumberland House. Tomison, like Walker, was shocked by the pitiable condition of the starving and sick natives who sought his aid. He took the desperately ill into the House and detailed men to attend them night and day. He tried to prevent spread of the infection by isolating "the invalids" and by having his men fumigate their own clothing with sulphur. Not one of the Company's men at Cumberland House contracted the disease; Charles Isham took it at Hudson House and, although very ill, he recovered. The Pedlars do not seem to have been so fortunate. At least two of them, William Bruce and James Tute, died of smallpox. The epidemic dealt a heavy blow to the fur trade. Many of the victims were in debt to the Hudson's Bay Company; the survivors lacked the courage and the strength to hunt.

The Cumberland and Hudson House journals which have been printed by the Hudson's Bay Record Society end with the entry of May 29, 1782. Their importance to students of the fur trade is self-evident. The late Professor A. S. Morton used them when preparing his *History of the Canadian West to 1870-71* and thus made known the principal features of the trade reflected in these journals. Publication of the full text of the documents provides a wealth of detail for which the student is also grateful. Occasionally the reader of the second volume of journals may have to turn back to the first in order to learn, for example, that "Tickameg" were whitefish and the Pigogomew lived on the South Saskatchewan. He may want to know more about "beat meat" than the journals reveal. But all who are interested in the history of the Prairie Provinces will hope fervently that the Hudson's Bay Record Society sees fit to continue publication of the inland journals, especially for the years of fierce competition which followed the organization of the North West Company.

Peace River Country

THE LAND OF TWELVE-FOOT DAVIS, A History of the Peace River Country, by James G. MacGregor. Applied Arts Products Ltd., Edmonton, 1952. 395 pages.

Reviewed by M. H. Long

IN his *Blankets and Beads*, published in 1949 by the same firm, Mr. MacGregor gave us an interesting regional history of the area tributary to the Saskatchewan River. In this book, larger by more than one hundred pages, he offers a similar study of the Peace River country. Of recent years there have been appearing from the press the volumes of a planned series on the Rivers of America, some of them by distinguished authors. Though not a part of this series, Mr. MacGregor's books bear comparison with the better of them. His work is spontaneous and not written to order. He writes for the love of it about a country which is his country and a people who are his people with the result that he catches and portrays admirably the spirit of both.

As in his earlier book Mr. MacGregor follows the topical method of development. Emphasis is placed on the two hundred miles of rough terrain which isolate the region from the valley of the Saskatchewan and make it an "empire" with a character all its own.

Eight or ten trifling errors have not been detected in the proof reading but in general it has been well done. Occasionally one feels that the narrative tends to be discursive but it is always clear. The topical method followed has the disadvantage of involving some repetition but it does leave a clearer picture in the reader's mind. The author has steeped himself in the pertinent literature of discovery, exploration and early travel. He has consulted newspaper

files such as those of the *Edmonton Bulletin*. He has travelled old trails, inspected the sites of old forts, and made friends with pioneers. He uses his sources with care and enlivens his narrative with many interesting quotations and anecdotes. Across his pages move not only great figures like Sir Alexander Mackenzie, David Thompson and Bishop Grouard, but also colourful lesser characters such as Banjo Mike, Baldy Red, Sad Sam, Coal Oil Johnny, Buckskin Annie, and the redoubtable Twelve-Foot Davis after whom, as a pioneer prototype, Mr. MacGregor has named his book. The text is supplemented by more than thirty maps and illustrations, some of which are of exceptional interest. The author has a readable style and the descriptions of the scenery and the bird and animal life of the Peace River country are touched with a sensitiveness and beauty which only the true nature lover can command. In short, Mr. MacGregor has caught the spirit of the land and its people and has written one of the best of the regional histories that have been produced in Canada.

The reading of this book prompts the expression of two hopes. One is that many other laymen will develop the intelligent and productive interest in history which Mr. MacGregor exemplifies, for he is not a professional historian but an electrical engineer. The other is that more regional histories of this type will be written.

Churchill Story

THE TUNDRA WORLD, by Theodora C. Stanwell-Fletcher. Little, Brown, Boston, 1952. McClelland and Stewart, Toronto.

Reviewed by Lyn Harrington

IT is perhaps difficult for a second book to measure up to the success of a good first effort. After *Driftwood Valley's* warm reception, evidently Mrs. Stanwell-Fletcher bethought her of another diary, one she had kept on a field trip as an undergraduate in biology. With some editing, fusing of personalities, disguise of names, the yellowed journal would do nicely. Interesting observations of the bird and animal life, the flora at Churchill on the edge of the tundra, are strung on a slender thread of story.

Most readers will not know where fact and fiction merge, and it doesn't matter, since the author is true to the feeling of the country. Others will recognize her accuracy in describing the region—wide estuary and white whales, huskies' chorus, sudden atmospheric changes, and equally sudden shifts from liking to hating to loving the barren land.

One has the uneasy feeling that it also retails the gullibility of a newcomer. There is a hint of hunter's yarns, in which details don't quite mesh. And it is disconcerting, on the first page to find Churchill described as "the northernmost point of steel in Canada." Whitehorse has had that honour since the Gold Rush. I also strongly doubt that the neat, pedantic "Dr. C., something of an authority on Canadian history" would ever refer to a famous explorer as "old Sam Hearne"!

The author editorializes effectively on several subjects, such as the destructive tendency of the white man, missionary influence on the natives, and the senseless treatment of sled dogs in summer. These points are well made. However, Mrs. Stanwell-Fletcher is careful to point out in her foreword that the book "does not pretend at all to be a profound or detailed study."

Metis Rebellions

STRANGE EMPIRE: A Narrative of the Northwest. By Joseph Kinsey Howard. Wm. Collins, Toronto, and Wm. Morrow, N.Y., 1952. 601 pages.

Reviewed by Douglas Kemp

BERNARD De Voto in the foreword to this absorbing book characterizes the author, the late Mr. Howard, as one who instinctively championed the exploited and identified himself with the defeated. The history of the Northwest was immensely enriched when he took up the lost cause of the *métis* and their visionary leader, Louis Riel. These subjects are predominant in the book, but their story is told with insight and sympathy and a moderateness one may be surprised to find, in the work of the protagonist of an oppressed minority group.

The compass of *Strange Empire* is the history of the resistance put up by people of mixed French and Indian blood and by their cousins, the Plains Indians, to the advance of the Canadian settlement frontier. Mr. Howard's narrative of the two insurrections, 1869 and 1885, is outstanding, not because he has offered much that hitherto was not known about the events, but because of his sensitive delineation of the cultures of the Plainsmen, semi-primitive and primitive. Riel, the Messiah of the *métis*, about whom few are neutral, is so deftly treated that no one should be offended, regardless of conviction. His every feature is faithfully limned in a portrait that is judicious and critical. Vivid and artistic language and colourful imagery mark these aspects of the book; aspects which are necessary to an understanding of how the threatened loss of those essential, invisible things that give people unity, confidence and self-respect, created the impulses which moved the *métis* to revolt. As a historian Mr. Howard is, on this level, very nearly impeccable.

This reviewer found it puzzling, however, that in other aspects Mr. Howard felt himself debarred from this admirable style of discussion. When he dealt with elements of the new order and even with some of the old, he worked on a level approaching mordant cynicism. The Hudson's Bay Company emerges only as incurious and unenterprising, monopolistic and autocratic. The De Meurons appear as veterans of some dog-eared European War—later identified

as the Napoleonic wars; Sir John A. Macdonald stands unrelieved as the embodiment of perfidy and vindictiveness. Canadian government policies are grasping, parsimonious, and always negative where they affect the *métis*. Surely something obscured the author's clairty of judgment when he wrote about the "other side."

It would appear that Mr. Howard, predisposed to suspect the strong, readily espoused the tradition of federal bungling in the administration of western affairs between 1868 and 1888. In Canadian historiography the tradition has crystallized in the past twenty years and it is perhaps natural that *Strange Empire* echoes the condemnation of the Canadian Government and its representatives which reached its most strident tones in Professor G. F. G. Stanley's *The Birth of Western Canada*. Not all of the evidence compiled to support the condemnation will stand up against careful cross-examination.

It is not to condone the undoubted shortcomings of the Government in these years that this reviewer would ask for a more balanced treatment of the history of that period. The Canadian Government programme to open the West was launched with enthusiasm, urged ahead with critical impatience by the peoples on the frontier, and its early progress was considerable. The survey system reached its ultimate refinement by 1883, in which year 27,000,000 acres were opened for settlement; most of the Plains Indians had been located on reserves by 1883, a herculean task considering their progressive demoralization; and a transcontinental railway was completed in 1885. The revelation that this progress was impeded, in some instances, by mismanagement and the adoption of ill-advised policies should come as no surprise. In following a pattern that was not his own but one defined by Canadian historians of reputation Mr. Howard, an American, should not be criticized.

Backwoods Quebec

CHIBOUGAMAU VENTURE, by Larry Wilson, Chibougamau Publishing Co., Montreal, 1952. 151 Pages.

Reviewed by J. A. Burgesse

CHIBOUGAMAU is an up-and-coming mining region of Northern Quebec, lying about mid-way between Lake St. John and James Bay. Larry Wilson stumbled across it almost by accident in 1949 when he went out to look for a mineral spring he had read about in an old mining report. Apparently he didn't find the spring, but he did fall in love with Chibougamau, its lakes, woods and uplands, and eventually built himself a dude camp, complete with shower, right out there in the wilderness. He also managed to acquire a score or so of mining claims, publish a weekly newspaper, which ran to two numbers, and set up a Fish and Game Club.

Chibougamau Venture is partly the story of the mining field, partly a collection of anecdotes, but chiefly an *apologia pro vita sua*; for Larry Wilson, in his heart of hearts, is ashamed of being mixed up in the mining game. If the region ever gets into production, which appears to be highly likely, his beloved Chibougamau beauty spots will be spoiled.

Wilson is at his best when telling of his own experiences, and some of the anecdotes are really amusing. Those of us who never did relish bush flying will appreciate the account of his flight from Lac Caché to Roberval in a Norseman, with a gasping sturgeon for companion. One or two of the character sketches of prospectors have charm.

Yet, it is a pity that the author did not restrain his enthusiasm for Chibougamau a little longer and devote some time to research before rushing into print. To cite only one instance: we were somewhat astonished to read that there are 3,000 full-blooded Indians in the 1,000 square mile area of Chibougamau. Having been around quite a while, and knowing a little about it, we would guess that 300 Indians is a high figure, and we imagine that most ethnologists will agree that not one of them can claim unmixed blood. Mr. Wilson's enthusiasm for them also seems to be a little naive when one remembers that a missionary priest, two hundred years ago, wrote that they belonged to the "most obdurate race of Cain," and later fur traders, less charitable than the good missionary, agreed with him, only in more colourful language.

Dictionary

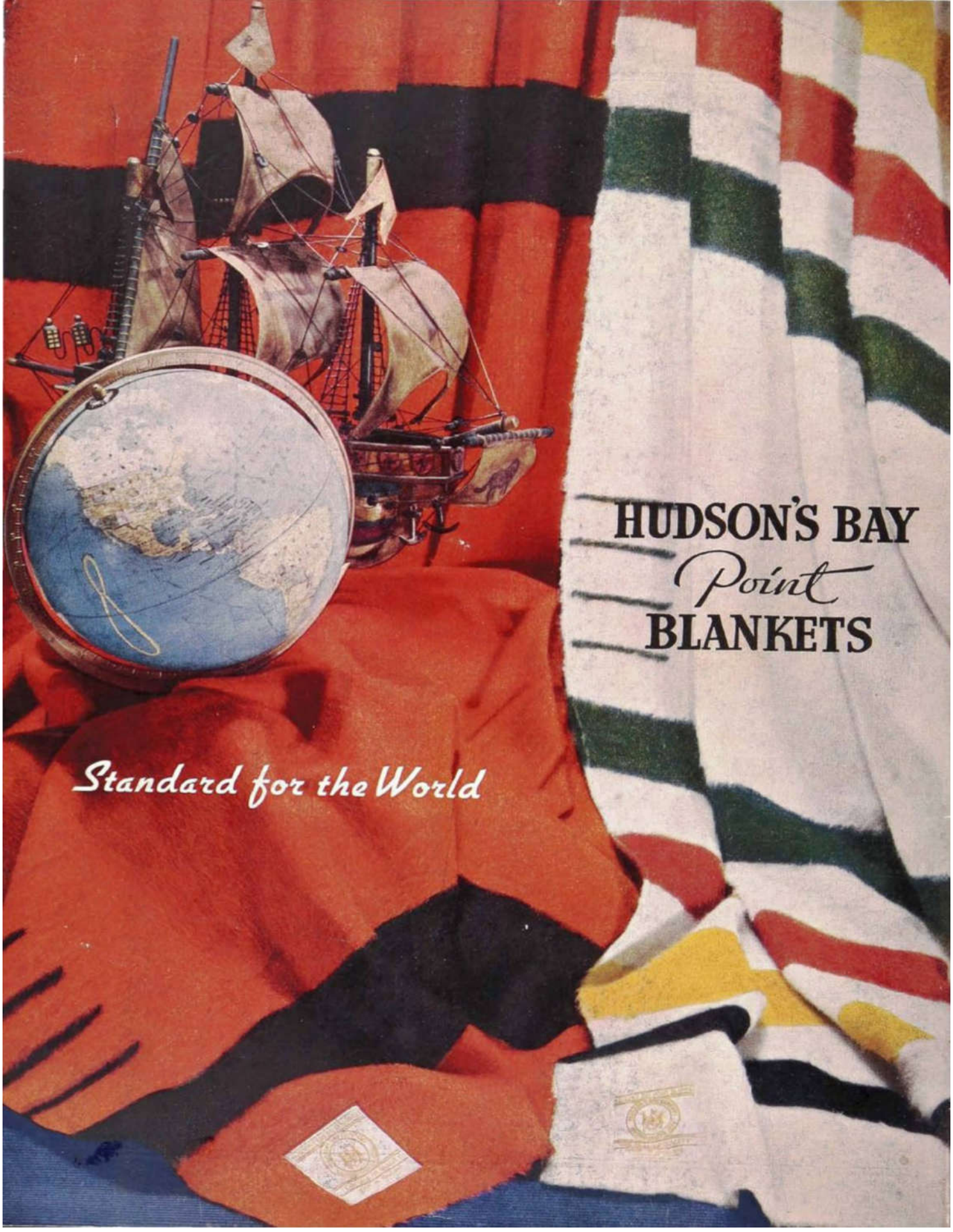
NEW DICTIONARY OF AMERICAN HISTORY, by Michael Martin and Lionel Gelber. Philosophical Library, New York, 1952. 695 pages.

IT is obvious," the authors say in their preface, "that a work of this scope presents many serious problems of selection and emphasis. . . . The biographical studies have been restricted to those prominent personalities who, in the authors' opinion, have most notably distinguished themselves." Which would lead one to suppose that they consider Calamity Jane and Jesse James, for instance—who are included—distinguished themselves more than, shall we say, Dr. John McLoughlin and Rev. Jason Lee, Oregon's representatives in Statuary Hall—who are not. Jacques Cartier and Champlain are given space, but not Montcalm or Wolfe who, it seems, really had quite an effect on the course of American history.

The book, however, is by no means devoted wholly to people. Headings include such varied subjects as Hawaiian Islands, Education, Cowboys, Mink Coat Scandals, Klondike Gold Rush, Police Powers, and Germany, Battle of. In short, it shows the results of an immense amount of research.

Winter Road

M. J. Humphrey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